

# Flexible and Rigid Cystoscopy in Women

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## ABSTRACT

**Purpose:** Previous studies have evaluated the tolerability of rigid versus flexible cystoscopy in men. Similar studies, however, have not been performed in women. We sought to determine whether office-based flexible cystoscopy was better tolerated than rigid cystoscopy in women.

**Materials and Methods:** Following full IRB approval, women were prospectively randomized in a single-blind manner. Patients were randomized to flexible or rigid cystoscopy and draped in the lithotomy position to maintain blinding of the study. Questionnaires evaluated discomfort before, during, and after cystoscopy.

**Results:** Thirty-six women were randomized to flexible (18) or rigid (18) cystoscopy. Indications were surveillance (16), hematuria (15), recurrent UTIs (2), voiding dysfunction (1), and other (2). All questionnaires were returned by 31/36 women. Using a 10-point visual analog scale (VAS), median discomfort during the procedure for flexible and rigid cystoscopy were 1.4 and 1.8, respectively, in patients perceiving pain. Median recalled pain 1 week later was similar at 0.8 and 1.15, respectively. None of these differences were statistically significant.

**Conclusions:** Flexible and rigid cystoscopy are well tolerated in women. Discomfort during and after the procedure is minimal in both groups. Urologists should perform either procedure in women based on their preference and skill level.

**Key Words:** Cystoscopy, Surveillance, Quality of Life.

## INTRODUCTION

Cystoscopic evaluation of the lower urinary tract is a vital part of an office-based urologic practice. However, regular surveillance cystoscopy is a significant source of morbidity for patients, and therefore attempts have been made to minimize discomfort secondary to this procedure. Flexible cystoscopy was first introduced in 1973 as a potentially less painful technique and has since become routine, particularly in men.<sup>1</sup> The current American Urological Association guidelines on the evaluation of microscopic hematuria recommend cystoscopy in appropriate individuals and report flexible cystoscopy to be associated with less pain or fewer postprocedure complications.<sup>2</sup> As expected, most of the initial studies concerning flexible cystoscopy involved men. The purpose of our study was to compare tolerability of rigid versus flexible cystoscopy in women.

## MATERIALS AND METHODS

We performed a randomized, single-blind, prospective study comparing tolerability of flexible versus rigid cystoscopy in women in an out-patient clinic setting at the University of Wisconsin-Madison. With full IRB approval, women 18 years of age and older were randomized in a patient-blinded manner to rigid or flexible cystoscopy. Patients were approached to participate in the study at the time of cystoscopy, and informed consent was obtained. Randomization was performed after patients agreed to participate in the study. Physicians were unaware of the randomization prior to obtaining informed consent. Indications for cystoscopy included hematuria, recurrent urinary tract infections, surveillance for cancer, and voiding difficulties. Procedures were performed in a teaching setting that included residents and attending physicians. All procedures were performed with the patient in the dorsal lithotomy position with the same sterile preparation utilizing 2% lidocaine jelly urethral instillation as a local anesthetic. Women were blinded by a drape to the type of scope being used. The Olympus CYF type V2 flexible cystoscope and ACMI M3 Series Gold rigid cystoscope were utilized in this study. No antibiotics were given as prophylaxis.

Questionnaires were completed just prior to the proce-

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dures, immediately after the procedure, and one week later. These addressed pain and the location of pain before, during, and after the procedure rated on a 10-point (10-cm) visual analog scale (VAS) (Figure 1). Women who had previously had rigid cystoscopy performed were also asked whether they preferred the current technique or the previous rigid technique. Questionnaires obtained one week later addressed duration of symptoms of hematuria, dysuria, and urinary frequency. Patients were asked to retrospectively rate their discomfort during the procedure and were also asked whether they had contacted any health providers due to concerns after the procedure.

Physicians also completed a form evaluating their success at visualizing the bladder completely, listing which scopes were used, and rating the level of difficulty of using the scopes on a 5-point scale with higher numbers representing more complexity. No women required sedation for the procedure. Results were analyzed by using Wilcoxon rank sums and Fisher's exact test with SAS statistical software version 9 (SAS Institute Inc., Cary, NC).

**RESULTS**

Thirty-six women were randomized to rigid (18) or flexible (18) cystoscopy. Questionnaires from one week later were returned by 31/36 women. Indications are shown in Table 1. On a 10-point VAS, median discomfort of those patients experiencing pain during flexible and rigid cystoscopy was 1.4 and 1.8, respectively (P=0.39, Wilcoxon). Median recall of pain 1 week later was 0.8 and 1.15 (P=0.37, Wilcoxon). In terms of peri-procedural pain, no statistical differences were observed between the flexible and rigid cystoscopy groups. The overall average pain scores before, during, and after cystoscopy on VAS were 0.33, 1.0, 0.47, and 0.16, 1.71, 0.67 in patients undergoing

flexible versus rigid cystoscopy, respectively. Average pain scores for those patients actually reporting discomfort associated with the procedure are shown in Table 2. The average duration of dysuria, hematuria, and frequency amounted to less than a day in both groups, and these differences were not significant when comparing rigid and flexible cystoscopy (Table 3). No patients had complications requiring contact with their health care providers following their procedure. Average ease of examination (on a 5-point scale) as rated by physicians was 1.78 for flexible scopes and 1.65 for rigid scopes (P=0.61, Wilcoxon). Cytology was obtained at the time of cystoscopy in 9 (flexible) and 11 (rigid) patients and was normal in all cases.

Although representing a small group, 10 of the patients

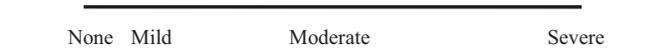


Figure 1. Visual Analog Pain Scale (Measures 10 cm in length).

Indication	Number of Patients
Surveillance	16
Hematuria	15
Recurrent UTIs	2
Voiding Dysfunction	1
Other	2

	Flexible (pts)	Rigid (pts)	P Value
Preprocedure			1.0
# Pts with Pain	1	1	
Average	5.9	2.9	
Median	5.9	2.9	
Procedure			0.39
# Pts with Pain	8	9	
Average	2.3	3.4	
Median	1.4	1.8	
Postprocedure			1.0
# Pts with Pain	2	3	
Average	4.2	4.0	
Median	4.2	3.0	
Recall Procedure			0.37
# Pts with Pain	9	10	
Average	1.9	2.6	
Median	0.8	1.2	

	Flexible (pts)	Rigid (pts)	P Value
Dysuria	0.71	0.57	1.0
Hematuria	0	0.79	0.22
Frequency	0.5	0.86	1.0

who had flexible cystoscopy performed had previously had rigid cystoscopy. Among these patients, only one preferred the previously performed rigid cystoscopy. The remainder either noted no difference between techniques (5) or preferred flexible cystoscopy (4).

## DISCUSSION

Office cystoscopy was utilized in the present study to survey the bladder for a variety of indications, most commonly hematuria and recurrent urinary tract infections. Symptoms of dysuria, hematuria, and voiding difficulty following cystoscopy can last several days.<sup>3</sup> While alternatives to cystoscopy such as urinary markers continue to be developed, a recent study indicates that patients are reluctant to forego cystoscopy without tests with 95% accuracy or better, such that cystoscopy remains an important surveillance tool.<sup>4</sup> Although it is anticipated that less invasive modalities will gain wider acceptance, it is important to evaluate methods of minimizing morbidity related to office cystoscopy.

Prior studies evaluating flexible and rigid cystoscopy have focused on complications, tolerability, and effectiveness. Previous studies have demonstrated equal efficacy between rigid and flexible cystoscopy in identifying tumors.<sup>5,6</sup> Earlier comparisons revealed male patients preferred flexible cystoscopy in the clinic rather than rigid cystoscopy in the operating room with general anesthesia.<sup>7,8</sup> Further, these evaluations could be safely performed without the use of routine antibiotics.<sup>9,10</sup>

Our current study is unique in that our data were obtained in the form of a randomized, patient-blinded trial in an attempt to minimize bias. Furthermore, this study is the first to focus on tolerability of cystoscopy in women in the outpatient ambulatory setting. Overall, both techniques are well tolerated by women with pain scores of 1.4 versus 1.8 out of 10 for flexible and rigid cystoscopy respectively. In contrast, flexible cystoscopy in men is better tolerated than rigid cystoscopy, presumably due to urethral length and the angle required to inspect the bladder. In general, excellent tolerability was noted with both techniques with the majority of women reporting minimal discomfort on the VAS. High tolerability is demonstrated elsewhere in the literature. In another study,<sup>4</sup> 60% of women reported pain less than 2 on a VAS when evaluated after flexible cystoscopy.

It should be noted that most of the patients in this study [14/22 (61%)] had previously undergone cystoscopy, which may have affected their perception of discomfort. It



**Figure 2.** Draping in the cystoscopy suite to permit patient blinding to flexible versus rigid cystoscopy.

is noteworthy that only 1 out of 10 patients undergoing flexible cystoscopy with previous rigid cystoscopy experience actually preferred rigid cystoscopy, whereas 4 preferred flexible cystoscopy and 5 had no preference. Furthermore, with flexible cystoscopy, women may be positioned supine in a frog-leg position which could be advantageous in the office setting. As has been shown previously,<sup>5</sup> performing cystoscopy with the patient in the supine position can decrease preparatory and procedural time. Because differences in positioning could potentially influence perceptions of pain or discomfort, in our study cystoscopy was performed with the patient in the dorsal lithotomy position to avoid any potential bias in this regard and to maintain blinding for both flexible and rigid techniques. This study was not actually designed to evaluate time elapsed in cystoscopy, although it may follow that with the use of 1 scope as opposed to 2, the flexible procedure may be faster. This study was also not designed to evaluate the role of local anesthetic in cystoscopy, given recent studies including a metaanalysis of 9 randomized trials indicating no difference in pain perception in patients with local anesthetic versus sterile lubricant alone.<sup>11,12</sup>

In addition to technique, several other aspects of office cystoscopy have been evaluated in relation to patient discomfort, which could potentially confound our findings. For instance, administration of midazolam has been found to be effective in lessening patient discomfort. In this randomized trial,<sup>13</sup> patients were divided into groups in which either flexible or rigid cystoscopy was performed in men and women, although the trial, designed to deter-

mine the effectiveness of midazolam, did not directly address flexible versus rigid cystoscopy. Another factor that may be significant in affecting patient discomfort is whether patients can observe the monitor during cystoscopy.<sup>14</sup> Patient age has also been cited as an important factor in that older patients are generally better able to tolerate cystoscopy.<sup>15</sup>

Cost may be another consideration in comparing these 2 techniques. Although patient preparation and maintenance costs for rigid and flexible cystoscopy are similar, the purchase price for rigid cystoscopes can be 2 to 3 times less than that for flexible cystoscopes.<sup>13</sup> However, flexible scopes are quite durable with reasonable repair costs.<sup>16</sup>

## CONCLUSION

Both flexible and rigid cystoscopes are well tolerated by women. Although a benefit for men may be noted with flexible cystoscopy, either the flexible or rigid technique may be used with a comparable pain tolerance and ease of use in women.

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