

## Evaluation of outpatient cystoscopy in urogynaecology

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### Abstract

**Objective** Prospective evaluation of outpatient cystoscopy in a Urogynaecology Unit.

**Design** Prospective observational series.

**Setting** St. George's Hospital, London. Department of Pelvic Reconstructive Surgery and Urogynaecology.

**Population** A total of 131 consecutive women, who underwent outpatient rigid cystoscopy over a 24-month-period.

**Materials and methods** Prospective data collection included cystoscopic findings, microbiology data, uroflowmetry and radiological results. An Immediate Feedback Questionnaire was completed at the end of the procedure.

**Main outcome measures** Success rates of the procedure, cystoscopy findings, requirements for additional investigations, including inpatient cystoscopy and patient satisfaction rates.

**Results** The mean age was 56.4 years (range 20–87 years). A total 126 women (96.2%) had a successful outpatient cystoscopy. In five (3.8%) women the procedure had to be abandoned because of inability to insert the cystoscope. Eleven women (8.7%) experienced pain but were able to tolerate the discomfort. Fifty-three (42.7%) women had abnormalities detected at cystoscopy. Thirty-seven women had trabeculations. Focal vesical lesions were found in 21 women. Thirty-nine (30.9%) women did not require any additional treatment. Six (6.9%) women were scheduled for repeat cystoscopy under general anaesthetic to facilitate a bladder biopsy. Fifteen women (17.2%) were

referred for urodynamics or renal imaging. Three women (3.4%) were referred to a urologist. More than 75% reported high satisfaction with the care they received. Four women had symptoms of UTI and two had positive urinary cultures and required antibiotics.

**Conclusions** The benefits of outpatient cystoscopy include high levels of tolerability and patient satisfaction, shorter waiting time, quicker implementation of treatment strategies, avoidance of the risks of general anaesthesia and lower procedural cost.

**Keywords** Outpatient · Cystoscopy · Urogynaecology · Patient satisfaction

### Introduction

Outpatient cystoscopy in urology became popular and widely available, with the introduction of flexible cystoscopy in 1984. Prior to that, the rigid endoscopy system had been the “Achilles heel” in the outpatient setting because it was not well tolerated by male patients. Flexible technology was developed in the 1970s by Harold Hopkins. However, urologists failed to adopt it early on in contrast to the gastrointestinal surgeons and physicians, who used it to make major leaps in diagnostic and therapeutic intervention for both the upper and lower gastrointestinal tract.

Haematuria is the single most common indication for cystoscopy, forming the bulk of work in the urology outpatient cystoscopy clinic. Previously, these investigations were performed by physicians. In the last few years however, with ever increasing demands for cost efficiency and continuity of care within the NHS, there has been a push to introduce nurse-led cystoscopy clinics [1, 2] and domiciliary cystoscopy services [3].

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In contrast, gynaecologists perform cystoscopy in limited settings. Indications include exclusion of bladder involvement during surgical staging of cervical cancers, diagnosis of intravesical endometriosis and ureteric stenting in major surgery, where the ureters may be at risk. Urogynaecologists, however, visualise the lower urinary tract more readily for a broad range of indications, most commonly for exclusion of intravesical lesions in women with lower urinary tract symptoms (LUTS) or recurrent urinary tract infections (RUTI), suspected foreign body and diagnosis of urethral diverticulum. It is also performed to exclude injury to the urethra, bladder and ureter during incontinence and pelvic reconstructive surgery.

At a time when resources are scarce due to reduced or capped capacity despite increased caseloads, decreasing waiting time targets and a relentless drive towards cost-effectiveness in health care delivery, there is a genuine need to transfer as many procedures as possible from the main inpatient waiting list to either the day surgery suite or an outpatient endoscopy list. This needs to be achieved without compromising patient safety, morbidity, outcome or satisfaction.

To achieve this we set up an outpatient rigid cystoscopy service in our unit. This is a large tertiary referral urogynaecology centre. In this report we describe our experience over the first 24 months.

## Materials and methods

A total of 131 women underwent outpatient rigid cystoscopy over a 24-month-period following the inception of this service. Women who required cystourethroscopy were offered the options of an outpatient procedure with local anaesthesia or an inpatient procedure under general anaesthesia. The majority chose the former. Prior to the procedure, a mid stream urine sample was sent for cytobacteriological investigations, and they were requested to complete a bladder diary. Depending on the clinical presentation, some women also underwent uroflowmetry, renal tract ultrasonography or intravenous urography.

An information leaflet regarding the procedure was sent to each patient by post prior to their appointment. All procedures were performed in the urodynamics unit by a urogynaecology fellow or consultant and facilitated by a specialist nurse. Informed consent was obtained. Where indicated, uroflowmetry was performed first. At cystoscopy, 10 ml of Xylocaine 2% was instilled into the urethra before the endoscope was introduced. The 70° scope was used to enable optimal visualization of the lateral bladder wall in those with previous continence surgery and the 30° or 12° cystoscopes in the remainder. Cystoscopy was commenced by recording the urinary residual followed by

filling with continuous saline infusion up to the maximum tolerated volume or 500 ml (whichever was reached first). A standard systematic approach was adopted to ensure global assessment of the vesical surface—including the ureteric orifices, the trigone, bladder neck, lateral walls and dome. The bladder was emptied and refilled in order to be further assessed for haemorrhage. The urethra was inspected at the end when the endoscope was retracted. Images were taken as necessary.

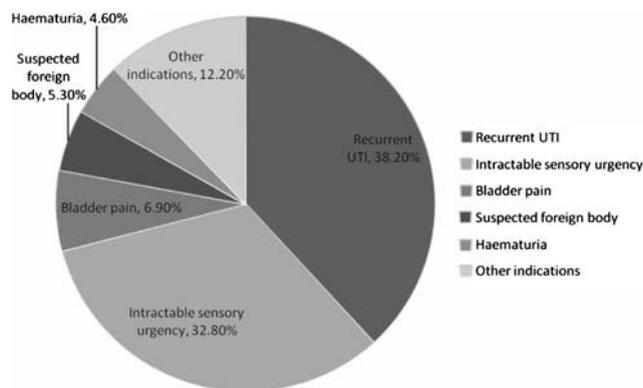
Microbiology data, uroflowmetry and radiological results were recorded on a standard report. The cystoscopic findings were also documented, including a bladder diagram to delineate the sites of any identified lesions. These data were transferred to a dedicated database at the end of each session to facilitate audit. The findings at cystoscopy and any other investigation results were explained to the patient and where necessary, appropriate therapy or change in therapy instituted in accordance with our unit protocols. All women were advised to hydrate themselves adequately for the next two days and to maintain a good urine flow. No prophylactic antibiotic was given. They were advised to consult the urodynamics unit or their general practitioner if they experienced urinary frequency or dysuria that persisted for more than two days.

An Immediate Feedback Questionnaire was completed at the end of the procedure and subsequent debriefing of each patient. They were also instructed to complete a Morbidity Questionnaire and to return it by post in 4 weeks (a pre-stamped envelope was provided).

## Results

The indications for cystoscopy are demonstrated in Fig. 1. The most common indications were recurrent UTI and intractable sensory urgency. The latter was defined as severe urge/frequency with or without pain, which failed to resolve on conservative treatment, which included bladder retraining and one or more anticholinergics. In contrast to the indications by our urological colleagues, only a few patients underwent cystoscopy for haematuria. In our unit, patients with macroscopic painless haematuria, abnormal urine cytology or radiological changes suspicious of malignancy are referred directly to the urological rapid access and screening service.

The mean age was 56.4 years (range 20–87 years). One hundred women (76.3%) had free uroflowmetry prior to cystoscopy. The mean urinary residual volume was 47.1 ml (range 0–300 ml), and voiding difficulty was identified in 11% of the cohort (defined as residual volume more than 100 ml and more than 50% of total voided urinary volume). Urine microscopy and culture results were available for 125 women (95.4%) (for all women with recurrent



**Fig. 1** Indications for referral for cystoscopy ( $n = 131$ )

UTIs). One hundred and twelve women had urinary cytology, of which 93.8% were normal and 6.2% had cytological atypia. These patients were referred to urology for further assessment.

Renal US was performed in 55 of the cohort (41%) and 16.4% returned with some abnormal ultrasonographic findings (e.g. renal cyst, dilated ureters). Only nine women had an IVU and one was found to have a dilated collecting system.

One hundred and twenty-six women (96.2%) had a successful outpatient cystoscopy. In five (3.8%) women the procedure had to be abandoned because of inability to insert the cystoscope (with or without urethral dilatation) secondary to pain, urethral spasm, urethral “stenosis” or acute angulation of the urethra from a previous retropubic bladder neck suspension. Eleven women (8.7%) experienced pain during filling but were able to tolerate the discomfort. The mean bladder distension volume was 389.7 ml (SD = 93.7, range 150, 600).

Fifty-three (42.7%) women had abnormalities detected at cystoscopy. Thirty-seven women had trabeculations and of them 27 were described as mild (72.9%), 8 were moderate (21.6%) and only 2 were severe (5.4%). Focal vesical lesions were found in 21 women, and these include 7 field changes (25.9%), one polypoid growth (3.7%) and 13 had other lesions (48.1%) such as bladder diverticula, cystitis cystica, squamous metaplasia and epithelial granulomatous or vesicular lesions of unspecified origin. The focal lesions also included one woman with erosion of part of an ethibond suture (used in prior colposuspension) and another one with had erosion of part of a TVT mesh.

After the cystoscopy, 39 (30.9%) women did not require any additional treatment. Twenty-seven women were given anticholinergics (31.0%), 24 women were prescribed long term rotating antibiotic prophylaxis (27.5%) for RUTI, nine were given topical estrogen (10.3%), and six physiotherapy/bladder retraining (6.9%). Only six (6.9%) women were scheduled for repeat cystoscopy under general anaesthetic

to facilitate a bladder biopsy to exclude painful bladder syndrome (formerly ‘interstitial cystitis’). Fifteen women (17.2%) were referred for further investigations including urodynamics and renal imaging. Only three women (3.4%) were referred to a urologist for further evaluation. Fifteen women received other treatment and general advice.

In the Immediate Feedback Questionnaire, more than 75% of women reported high satisfaction with the care they received. Sixty-five women (71.4%) completed and returned the Morbidity Questionnaire after 4 weeks. Nine of them (13.8%) had some irritative symptoms and macroscopic haematuria that resolved within 24 h. Four women (6.2%) contacted their GP with symptoms of UTI and two (3.1%) had positive urinary cultures and required antibiotics.

## Discussion

The indications for outpatient cystoscopy in our study sample were mainly recurrent UTI, intractable sensory urgency, bladder pain and suspected foreign body; together accounting for 89% of all referrals. These women essentially presented with persistent lower urinary tract symptoms of frequency, urgency, urinary incontinence and dysuria. These findings compare well with those of Goldberg et al. [4] when they reviewed 1,011 women who attended outpatient cystoscopy. The most prevalent indications for cystoscopy in their cohort were lower urinary tract storage symptoms including nocturia (90.2%), urgency (73.0%), urge incontinence (70.2%) and stress incontinence (59.9%). Other indications were urethral tenderness (27.6%), bladder tenderness (23.7%), haematuria (21.6%), dysuria (19.2%), recurrent or persistent infections (16.8%), postvoid dribbling (15.6%), urethral mass (3.3%), and previous pelvic surgery (47.5%). Their most common findings were chronic urethrotigonitis (30.0%), trabeculation (13.2%), atrophic urethrotigonitis (11.3%), glomerulation (6.9%), urethral stenosis or stricture (4.8%), cystitis cystica (3.0%), cystitis glandularis (2.1%), absent ureteral efflux (2.1%), benign polyp (1.4%), urethritis (1.0%) and radiation cystitis (1.0%).

Being a tertiary referral centre, we had an over-representation of women with recurrent UTIs and refractory bladder overactivity following failed bladder retraining and anticholinergics. In these women, before continuing their long term anticholinergics and antibiotics, it is critical to exclude an intra-vesical lesion or inflammatory bladder condition (e.g. painful bladder syndrome), that may be the cause of persistent symptoms. In addition to upper renal tract imaging, cystoscopy is most helpful to exclude the presence of calculi, extruded sutures, migrated tape or mesh and bladder wall pre-cancerous and cancerous changes. With the

increase in midurethral tape procedures sometimes performed by clinicians with limited cystoscopic training, the development of persistent de novo sensory urgency, bladder pain or recurrent UTI is an absolute indication for cystoscopy to exclude unrecognised bladder perforation or mesh erosion. In this series, 6 (6.9%) women were referred for subsequent cystoscopic biopsy under general anaesthesia for suspicious mucosal findings, one woman was found to have ethibond suture (from previous colposuspensions) migrated through the vesical wall and one woman had an eroded TVT tape (polypropylene).

Haematuria featured in only 5% of the women, compared with 21.6% in Goldberg's series [4]. Haematuria is the primary indication for cystoscopy in urology clinics. In this series women with haematuria also had one or several other urinary symptoms. The yield of picking up bladder tumour amongst women with asymptomatic haematuria is very low, about 0.5–1.0%. Even in the high risk group (male, smoker, age >60), the positive predictive value of haematuria ranges between 5 and 8%. In Goldberg's retrospective analysis, they uncovered 9 (0.9%) transitional cell tumours (including those 21.6% women presented with haematuria). We did not encounter any in our smaller sample.

Seventy-one (71/124, 57.3%) women had no abnormalities at cystoscopy, whereas the remaining 42.7% (53/124) had one or more abnormal findings. In those women with a normal cystoscopy, we were able to reassure them regarding their symptoms, many of which were chronic with resultant psychosomatic sequelae and behavioural adaptations impacting on quality of life.

We report high levels of tolerability and patient satisfaction in this study where we used intraurethral xylocaine gel as the only form of analgesia. We feel that the addition of pre-cystoscopy counselling and provision of an information leaflet prior to the appointment, made a significant impact on patient tolerability in our series. The value of lidocaine gel has been questioned by a number of authors [5–10]. Goldfischer et al. [5] compared the pain scores in men and women undergoing rigid cystoscopy using either 30 ml lidocaine or anaesthetic-free gel 20 min before introducing the endoscope. Their findings suggested that, although men had significantly less pain when lidocaine gel was used, there was no difference in pain perception in women. They attributed this finding to the ease of passage of the cystoscope through the shorter female urethra or to the better tolerance of pain by women. They also noticed a slight decrease in pain perception with increasing age. Overall, they concluded that lidocaine gel grants no advantage over plain lubricant in pain relief during rigid cystoscopy in women.

We do not routinely prescribe prophylactic antibiotics either before or after cystoscopy. The literature is divided

regarding the use of antimicrobials to prevent post-procedure infection. Rane et al. [11] evaluated the impact of routine prophylaxis at cystoscopy. They reported that intravenous gentamicin reduced the rate of post-cystoscopy (flexible) positive urine cultures from 21 to 5%. Their reported rate of positive culture was abnormally high [12–14], which questions the significance of these findings, as they have not been confirmed by more recent studies [13].

Almallah et al. [14] studied 201 patients who had flexible cystoscopy ( $n = 103$ ) or urodynamic testing ( $n = 98$ ). A total of 4.5% of their patients developed significant bacteriuria 48 h after the procedure, and of these, only two reported symptoms of UTI. In another study by Manson et al. [15] of 138 women undergoing outpatient cystoscopy the post-endoscopy incidence of bacteriuria was 2.8% in those women not given antibiotics and 1.5% in those who received prophylaxis. Turan et al. [12] found an 8% incidence of bacteriuria and 8% incidence of pyuria without significant bacteriuria after outpatient cystoscopy. None of their patients developed bacteraemia. They concluded that antibiotic prophylaxis should not be routinely administered. Furthermore, intravenous antibiotics increase the invasiveness of the procedure, are potentially not cost-effective and gentamicin, in particular, is associated with potential morbidity in elderly patients with impaired renal function.

The morbidity and potential complications of cystoscopy are routinely discussed when taking informed consent. None of the women in our cohort withheld consent due to the potential morbidity of the procedure. The majority of our women tolerated cystoscopy extremely well with 75% rating the experience as "highly satisfactory" at completion of the procedure, which included the level of discomfort encountered. Only 13.8% experienced irritative symptoms and gross haematuria in the 48 h after the procedure. Our findings are comparable with those of Burke et al. who studied 420 patients (both male and female) attending for outpatient cystoscopy [16], but in this case using the flexible scope. They also reported high levels of acceptability with median pain scores of 1.1 (range 0–8.5). After the procedure 50% subjects reported pain on voiding, 37% had urinary frequency and 19% had macroscopic haematuria. The incidence of cystoscopy associated UTI was 2.7%.

Cost-effectiveness is currently a key theme in health service provision and there is therefore an important drive to move minor inpatient procedures to day surgery or to perform them as outpatient procedures. In 2003, the cost of an inpatient rigid cystoscopy was approximately £530 as opposed to £161 for the same procedure done on an outpatient basis. Moving the procedure to outpatients potentially amounts to an annual saving of £36,900, based on a conservative figure of 100 cystoscopies performed in one year.

The outpatient technique had a significant impact on our in-patient waiting times. We reduced the maximum waiting

time for cystoscopy from 12 months under general anaesthesia to only 10 weeks under local anaesthesia in outpatients. A shorter waiting time has significant advantages including reduction in DNA (did not attend) rates, lowered patient anxiety and better compliance. It also has advantages for the in-patient waiting list, by freeing up space for at least 45 major gynaecological operations for every 90 outpatient cystoscopies performed.

Furthermore, nurse-led flexible cystoscopy has been recognized by the British Association of Urological Surgeons (BAUS) and relevant guidelines have been issued [17]. However, audits of nurse-led settings revealed shortcomings including increased referrals for cystoscopies under general anaesthesia, or lack of long term follow up data [18].

The major advantages of flexible endoscopy are ease of performance due to smaller calibre instruments, improved global visualisation of the vesical surface and enhanced patient comfort and tolerability [19]. This is offset by greater cost, shorter instrument lifespan, higher maintenance due to the delicate fibre-optics and dimmer and poorer quality images obtained. It is therefore conceivable that in a low volume urogynaecological setting with no male patients, the rigid system is more cost-effective and justified.

The value of outpatient rigid cystoscopy in urogynaecology is not only in the confirmation of intravesical lesions that give rise to persistent lower urinary tract symptoms. It is also vital in providing significant null diagnosis, thus allowing the attending physician to continue pharmacotherapy and behavioural modification with the assurance that organic pathology has not been overlooked. This stance generates the dilemma that as women age and if the LUTS persist, how often we should perform endoscopy to exclude concurrent bladder pathology. Further research is needed to resolve the issue; but as for current clinical practice, an appropriate response would be to repeat the cystoscopy if there is any unexplained worsening of baseline symptoms.

This study supports the practice of outpatient rigid cystoscopy in a urogynaecology unit as it is feasible, well tolerated and cost-effective. A small group of women will eventually require cystoscopy under general anaesthesia; in our study 3.8% (5/131) for not tolerating the outpatient procedure and 4.8% (6/126) for having a suspicious bladder lesion requiring histological evaluation. Therefore, the majority of women with a definite indication for cystoscopic assessment could be assessed as outpatients. The benefits included shorter waiting time, quicker implementation of definitive treatment strategies, avoidance of the risks of general anaesthesia, higher patient satisfaction and lower procedural cost. In the present cost-containing drive in public healthcare provision, such a service will bear immense benefits to the patient, the doctor and the health service providers.

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