



Day-case rigid and flexible ureteroscopy

EJ BROMWICH, R LOCKYER, SR KEOGHANE

Department of Urology, St Mary's Hospital, Portsmouth, UK

ABSTRACT

INTRODUCTION The aim of this study was to evaluate the feasibility of rigid and flexible ureteroscopy as a day-surgery procedure.

PATIENTS AND METHODS All patients requiring elective ureteroscopy from March 2004 were considered for a day-surgery procedure. The standard day-surgery exclusions existed but there were no urological criteria for exclusion. A single consultant urologist performed or supervised all procedures.

RESULTS A total of 64 patients underwent 50 rigid and 14 flexible procedures. Six diagnostic ureteroscopies were performed. There was a 96% stone clearance rate. Five patients required an unplanned admission within the first 2 weeks' postoperative-ly. Three of these patients were admitted on the day of surgery, two for pain and one for social reasons. Two patients were admitted at 24 h and 48 h, respectively, for urinary retention.

CONCLUSIONS Ureteroscopy, both rigid and flexible, is a safe procedure for the day-surgery setting. Routine use of prophylactic antibiotics, intravenous non-steroidal anti-inflammatory drugs resulted in an acceptable re-admission rate.

KEYWORDS

Day-case – Ureteroscopy – Outcome

CORRESPONDENCE TO

EJ Bromwich, Specialist Registrar, Department of Urology, St Mary's Hospital, Milton Road, Portsmouth PO3 6AD, UK
T: +44 (0)2392 2860000; F: +44 2392 2862356; E: emma.bromwich@virgin.net

Day-case upper tract endoscopy has obvious benefits for both the patient and the healthcare provider, in the public and private setting. In many units, ureteroscopy is an in-patient procedure although, anecdotally, some patients will go home on the night of surgery.

The feasibility of day-case ureteroscopy has been suggested by studies reviewing patients within the in-patient setting who were fit for discharge on the day of surgery.¹ Taylor *et al.*,² in a retrospective study evaluating the outcome of rigid ureteroscopy in the day-case, setting showed a 26% admission rate, but a 98% stone clearance with 56% of stones being in the distal ureter. These are the only data from ureteroscopic procedures performed in a dedicated day-surgery setting.

Our unit adopted a policy of planned day-surgery rigid and flexible ureteroscopy and we have prospectively evaluated the outcome over an 18-month period.

Patients and Methods

All patients listed for ureteroscopy between April 2004 and August 2005 were considered for a day-case procedure. Exclusion criteria included those who were medically unfit or with social issues precluding same-day discharge. A

predicted anaesthetic time greater than 120 min was an additional limiting factor.

All patients were admitted to the day-surgery unit which forms an integral part of the main hospital theatre complex. They were treated by, or under the supervision of, a single consultant urologist with an interest in endourology. They all received general anaesthesia, although several different anaesthetists were involved. The majority of patients received intravenous non-steroidal anti-inflammatories (NSAIDs) unless contra-indicated. All patients received intravenous gentamicin (3 mg/kg) and amoxycillin (1 g), prophylactically.

Ureteroscopy using a Wolf 6, 7.5 and 9.5 rigid ureteroscope and the ACMI DUR8 flexible ureteroscope was performed using a standard safety wire. The majority of stones were treated with a Holmium:YAG laser or removed intact. A double pigtail stent was placed as clinically indicated. Data were recorded prospectively.

Results

A total of 127 patients were listed for ureteroscopy during the study period; of these, 63 patients had an in-patient procedure and 64 a day-case procedure (Table 1).

Table 1 Indications for ureteroscopy

Ureteric stones	32
Renal/pelvic stones	13
Diagnostic	19

Twelve of the in-patient procedures were performed as the patients were unfit for day-case anaesthesia. Fourteen were tertiary or Channel Island referrals precluding same-day discharge. Twelve patients required lengthy procedures exceeding the day-case time restrictions. Twenty-five patients were suitable for a day-case procedure but were performed as in-patients to meet waiting list demands.

Sixty-four patients underwent day-case procedures during the 18-month study period. The mean age was 46 years (range, 19–72 years). Of the patients, 13% had an ASA score of 2, 87% scoring ASA 1.

Thirty-two patients had ureteric stones; the site and size of the stones are detailed in Table 2. Twenty-nine patients were stone-free post primary procedure (91%). Two patients who were stented post procedure (one with an upper ureteric stone and one with a distal stone) had a small residual fragment; one patient was stented due to a distal ureteric perforation. These three patients were stone-free after a secondary procedure.

Thirteen patients were treated for renal calculi; the site and size of the stones are detailed in Table 3. Five of these patients were complex stone patients who had had multiple previous treatments including percutaneous nephrolithotomy. They had a large stone burden and multiple retrograde procedures were planned. Three patients with pelvic stones were cleared. Five patients had failed access; three had ureters too tight for passage of the scope, and one had a tight pelvi ureteric junction and one had no access to the lower pole of the kidney.

Table 2 Ureteric stones

	Upper (<i>n</i> = 7)	Mid (<i>n</i> = 7)	Lower (<i>n</i> = 18)
Mean size (mm)	7.6	9	9.1
Range (mm)	3–10	8–12	4–15

Table 3 Renal stones – size and location, excluding staghorn and complex stones

	Pelvic	Lower pole	Upper pole
Mean size (mm)	10.2	7.2	8.5
Range (mm)	4–20	5–11	8–9

Nineteen patients underwent diagnostic ureteroscopy; six patients for diagnosis or surveillance of malignancy, thirteen patients had on-going pain and non-diagnostic radiology. Four of these patients had calcification confirmed outside the ureter at endoscopy.

The re-admission rate was 8% (*n* = 5). Two patients had a planned admission due to surgical events; one patient had an optical urethrotomy for a urethral stricture and was, therefore, catheterised, the second patient, a recurrent stone former refused a stent pre-operatively. At the time of surgery, it was felt drainage was required and a ureteric catheter was left *in situ*. The patient was hospitalised until it was removed. Four patients had unplanned admissions for medical reasons and one patient for social reasons (Table 5).

Significant complications (1.5%) included one ureteric perforation with no evidence of subsequent stricture forma-

Table 4 Unplanned admissions**Unplanned medical (immediate) *n* = 4**

Pain	No treatment required
Idiopathic thrombocytopenia given NSAID	

24 hours

Urinary retention	Discharged once catheter removed
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48 hours

Clot retention	Discharged once catheter removed
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Unplanned social (immediate) *n* = 1

Overnight stay

Table 5 Planned admissions

Planned (immediate) n = 2 Catheterised post optical urethrotomy Ureteric catheter (patient refused stent)	Discharged once catheter removed
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tion. All patients remain on regular follow-up. Mean period of follow-up is 10 months (range, 1–18 months).

Discussion

This study is the first prospective study looking at planned day-case ureteroscopy. Taylor *et al.*² retrospectively reviewed rigid ureteroscopy. In our study, we have prospectively examined both rigid and flexible ureteroscopy in the day-surgery setting.

We had an unplanned admission rate of 8%. There were four medical admissions, two immediate; neither of these patients received any treatment and were discharged at 24 h. There were two delayed admissions at 24 h and 48 h with urinary retention and clot retention, respectively. There was one social admission: although all patients were screened pre-operatively to ensure social support was available on the day of surgery, there was no appropriate transport home for this patient who was, therefore, admitted.

Taylor *et al.*² had an unplanned admission rate of 25%. The immediate admissions were predominantly for pain and the delayed admissions for stent symptoms and infection. Our policy of high-dose Gram-positive and Gram-negative bacterial antibiotic cover and intravenous NSAIDs may have reduced the impact of pain and infection on the re-admission rate. Of patients in our study, 34% were stented post procedure compared with 81% in a previous study.² This lower rate of stent insertion produced no admissions with sepsis or stent symptoms. The role of stent insertion after therapeutic ureteroscopy is controversial and has changed with the evolution of the technique. Recent evidence suggests obligatory stent insertion is no longer indicated and each case should be judged by the surgeon as to the necessity for kidney drainage.³

The stone clearance rate in this study was 96% for patients with uncomplicated renal and ureteric stones. Of the treated stones, 29% were in the kidney or upper ureter.

Taylor *et al.*² quote a 98% stone clearance rate for predominantly mid and distal ureteric stones; 8% of stones treated were in the upper ureter. These clearance levels are consistent with other published data.^{4,5}

This study has confirmed the observation that ureteroscopy is feasible in the day-case setting. Patients need only be excluded from such a procedure if they fall outside the standard day-surgery remit. We have demonstrated a reduced re-admission rate compared with previous studies and recommend the routine use of antibiotic prophylaxis and intravenous NSAIDs but the use of ureteric stenting only when absolutely necessary.

Conclusions

All patients requiring ureteroscopy should be considered for a day-case procedure where facilities allow such surgery. We suggest that this is advantageous for both the patient and the medical provider.

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