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The Evaluation of not Stenting after Uncomplicated Ureteroscopy: A Randomized Prospective Study

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Objective: The aim of this study is to determine the morbidity associated with not placing a ureteral stent following uncomplicated ureteroscopy and to determine the safety of performing ureteroscopy as a day-case procedure.

Design: This is a randomized, prospective study.

Setting: The study was done in the Day-case Unit.

Methods: Sixty-one patients with symptomatic ureteric stones who underwent ureteroscopy as an outpatient procedure were enrolled in the study. The patients were followed up at days 1 to 4 then 4 to 6 weeks postoperatively to determine the morbidity associated with the procedure - analgesic use and length of time to return to normal activity. Follow up consisted of urine analysis and radiological studies, which were done 2 to 3 months postoperatively.

Results: Twenty one patients (34%) had no discomfort in the early postoperative period. The remaining 40 patients (66%) had discomfort, 35 (57%) had pain, which was relieved by the second postoperative day. The main indication for admission was pain and hematuria. Five patients required admission. None of the patients had major immediate postoperative complications and all except one had follow up excretory urography or ultrasound done. None showed newly identified ureteric strictures or stone recurrence.

Conclusions: Day-case ureteroscopic management of ureteric stones is a potentially safe procedure and can be performed in selected patients.We believe that routine placement of ureteric stents following uncomplicated ureteroscopy is not essential. In this study none of the patients had major immediate postoperative complications.

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Ureteroscopy is one of the major endourologic procedures used for diagnostic and therapeutic purposes. The main indication for this procedure is ureteric stones, but other indications would include tumor lesions of the ureter, renal pelvis and ureteral strictures[1].

This procedure is usually performed as an in-patient procedure in Bahrain since most patients are admitted through the Emergency department. However, in North America and other centers, it is mainly performed as an outpatient procedure[1]. More centers worldwide are taking on that protocol, which is more efficient and cost-effective.

The routine placement of a ureteral catheter or stent following ureteroscopic stone manipulation is widely recommended[2]. The rationale for stent placement is to reduce or prevent postoperative ureteric strictures and to prevent colic secondary to postoperative ureteral edema[3].

This randomized, prospective study aims to determine the safety of performing ureteroscopy as a day case procedure and to determine the morbidity associated with not placing a stent following uncomplicated ureteroscopy.

METHODS

From July 1997 to December 1999, we have prospectively followed 61 consecutive patients who underwent ureteroscopy without stenting for the management of ureteric stones. Forty were male with a mean age of 26 years and 21 were female with a mean age of 21 years. One patient was excluded from the study because he was lost for long follow up.

The patients were treated as an outpatient. The procedure was performed under general anesthesia. Balloon ureteric orifice dilatation was performed in all patients. A Wolf 8.5Fr rigid ureteroscope was introduced and the stone was fragmented with a Swiss lithoclast pneumatic lithotripter.

Postoperatively, all patients received one dose of an intramuscular narcotic analgesic (pethidine) and were provided with a dextropropoxyphene + paracetamol (Distalgesic) prescription.

The patients were informed that there would be some discomfort at the end of the procedure.

The patients were followed up 1 to 4 days and at a second stage 4 to 6 weeks postoperatively. They were asked whether they had visited the emergency room for any postoperative complications, their use of analgesics and the time required to return to normal activity. Patients were asked to return for a radiological follow up with renal ultrasound or excretory urogram postoperatively.

RESULTS

Fifty-five patients (90%) had pain at presentation, 61 (100%) had microscopic hematuria, 40 (66%) had dysuria and 40 (66%) had increased frequency of micturation.

All the patients had KUB preoperatively, while ultrasound was performed for 13 (21%) patients and IVP was performed for 48 (79%).

The main indication for surgery was pain and/or obstruction.

Eleven (18%) patients had upper ureteric stones, while 50 (82%) had lower ureteric stones. The stone size ranged from 4 mm to 1.8 cm, 14(23%) patients had multiple stones and 47 (77%) patients had single stones.

Twenty-one patients (34%) had no post-operative pain. Forty patients (66%) had immediate postoperative pain in the recovery room (Table 1).

Table 1. Duration of Post-operative Pain

Duration of Post-operative Pain	No. of Patients
No pain	21 (34%)
Recovery Room (4 to 6hrs)	40 (66%)
Within 24hrs	26 (43%)
1st Postoperative Day	16 (26%)
2nd Postoperative Day	5 (8%)
Later	Nil

Only 5 (8%) patients required hospitalization, 4 (7%) were females and one was a male patient. The reason for their admission was severe pain and hematuria (Table 2).

Table 2. Number of patients with Postoperative complications

Complications	No. of Patients
Pain and hematuria	5
Recurrence	Nil
Ureteral stricture	Nil

There were no major complications in the immediate postoperative period.

All patients except one were followed up with ultrasound or IVP. No disorders were detected except one patient was re-operated for a stone on the contralateral side. One patient was lost in the follow-up period.

DISCUSSION

Endoscopic procedures mainly ureteroscopy, are preformed as day case surgeries in most of North American urologic centers. Some authors have even reported performing such surgeries with intravenous sedation in a large number of out-patient series[4]. In Bahrain, this type of surgery is mainly done as an inpatient procedure.

Although ureteric stenting after ureteroscopy has been recommended to prevent the development of ureteric strictures and relieve any ureteral edema[1,5], there have been no controlled trials in humans to our knowledge, which have shown that it prevents strictures.

There are several reports suggesting that stent placement may be associated with significant symptoms of chronic infection, irritation and stone formation and these disorders persist until the stent is removed[6,7,8]. We are not aware of any comparative studies of patients with and without stents following ureteroscopy, or any reports suggesting any symptomatic advantage gained by placing a stent.

All 61 patients in this prospective study had KUB done to establish the diagnosis of ureteric calculis which were mainly situated in the lower ureter. The majority presented with microscopic hematuria. These patients were selected to undergo ureteroscopy as an outpatient without stent placement.

Follow-up of the patients and assessment of the duration of immediate postoperative pain reveled that 34% were pain free. The majority of patients (66%) had pain up to 4 to 6 hrs in the recovery room. None had continuous pain beyond the 2nd post-operative day (Table 1). There were five patients who required admission due to pain (3 patients), pain and hematuria (2 patients). They were discharged after the first post-operative day (Table 2).

Most patients required one dose of intramuscular narcotic (Pethidine) postoperatively. Patients used oral analgesics to relieve the pain.

Further follow-up at 4 to 6 weeks revealed no incidence of ureteric stricture or recurrence of the calculus in 60 patients.

Although traditional protocol necessitates the placement of a stent, various studies have showed its irrelevance in uncomplicated ureteroscopies. Hosking et al reported a good outcome in 93 patients who underwent ureteroscopy without stent placement as an outpatient procedure. About 43% had no discomfort and the remaining had discomfort that was short-lived ($\leq$2days)[9]. Similarly, this study showed that the majority of patients had discomfort, which did not last more than 4 to 6 hours in the recovery room, it was controlled with one dose of intravenous narcotic postoperatively. This supports the idea that ureteroscopy done for ureteral calculi can successfully be managed in the outpatient unit and does not need the placement of a stent, if the procedure is uncomplicated.

A potential problem associated with this approach is predicting those patients who might develop severe pain and hematuria need admission regardless of an uneventful procedure and those who will not. Although those with potential problem constitute a small number of patients, their recognition is necessary. Rane et al experienced only one admission essentially for loin pain after ureteroscopy as an outpatient procedure without stenting[10]. Although the procedures were uneventful, five patients in this study required admission. There were no obvious indicators to predict that these patients would potentially need subsequent admission. To manage this problem, experienced nursing staff, immediate

follow-up and an adequate recovery time should be allowed, so as to determine which patients will need admission postoperatively.

We do believe that routine placement of stents following complicated ureteroscopy is indicated, but for straightforward uncomplicated procedures it is not recommended.

CONCLUSIONS

The result of this study indicates that ureteroscopy performed in the outpatient unit can be a safe alternative to traditional hospital admission in selected patients. Ureteric stenting is not a necessary procedure after ureteroscopy as long as it is uneventful. However, close postoperative observation is essential to determine those small number of patients who require admission postoperatively due to minor complications (pain and hematuria).

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