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Day case endourology in surgical outpatient clinic at Ibadan: A 5 year review

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KEYWORDS

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Abstract

Objective: To review our day case endourological practice over a five-year period.

Subjects and methods: Data was obtained from the endourology day case register and these were analysed using simple statistical methods. Caudal anaesthesia and intravenous sedatives were used for the procedures.

Results: A total of 559 patients underwent endoscopic procedures as day cases. Their ages ranged from 10 to 88 years, with a male to female ratio of 4 to 1. Four hundred and thirty eight (78.4%) were diagnostic and 121 (21.6%) were therapeutic. The main diagnostic procedures were urethrocystoscopy ($n = 222$), and cystoscopy alone ($n = 116$), cystoscopy and biopsy ($n = 46$) while the therapeutic procedures were direct visual internal urethrotomy ($n = 86$), endoscopic cystolitholapaxy ($n = 10$), and rigid retrograde endoscopic realignment ($n = 7$) for posterior urethral injury. The main anaesthesia was caudal block in 472 patients and topical 2% xylocaine jelly with sedation in 86 patients.

Conclusions: There is a steady increase in therapeutic day case endourology. Caudal anaesthesia provides effective pain free procedure to the patient. Surgical trainees can benefit by learning the technique of caudal block anaesthesia.

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Introduction

Day case surgery is increasingly being practiced worldwide and is now a recognized department in some parts of the world. This is not surprising because the patient is discharged home on the same day of the surgery. This is possible because of the improvement in anaesthesia [1], development of effective antimicrobial agents [2,3] and advancement in surgical equipments that can be adapted into small instrument. Endourology allows all the urinary organs to be assessed using appropriate endoscopes.

Most traditional open surgical procedures are now being done endoscopically with comparable results and reduced complication rates. In the early part of the millennium, endoscopic procedures were

less performed in our environment because of high cost of procuring the necessary equipments and low number of trained personnel [4].

Day case endoscopic procedures are well tolerated by the patient. They are convenient as well as reduce waiting time in the hospital and the patient feels happy going back home [5].

We retrospectively reviewed our day case endourological procedures to determine if there is an improvement in utilization, extent of therapeutic day case endourology, and the benefits to the patient and the hospital. We also tried to assess the value of caudal anaesthesia to the patients and its significance in the training of surgical residents.

Subjects and methods

Setting

The day case endoscopy suite is located within the outpatient clinic department of our teaching hospital. It has a waiting section, a consulting section, a reception, a recovery wing and the main endoscopy section. The patients are given fixed appointment date and an average of 5–6 procedures are done per session. Each patient is accompanied by at least one other competent adult. The study was done at the University College Hospital, Ibadan, Nigeria.

Methods

The data of all the patients who had endoscopic urological procedures from October 2006 to September 2011 was retrieved from the day case endourology register. The parameters analysed included; age, sex, indications for the procedures, type of procedure, types of anaesthesia and record of any complications.

Statistical analysis

These data was analysed using range, mean, and standard deviation of mean, ratio and percentages.

Technique

The caudal anaesthesia was administered by the consultant urologist or the senior resident in urology. This entailed placing the patient prone, skin of the low back and gluteal region is prepared with 1% povidone iodine. The land mark of posterior superior iliac spines and sacrococcygeal joint is identified. A wheal of xylocaine is raised around the sacral hiatus and the needle advanced through the sacrococcygeal membrane at an angle of 45° to the body, into the sacral canal extradural space. The needle is aspirated for blood or cerebrospinal fluid. If dry, then 10 ml of 2% xylocaine hydrochloride solution is deposited into the space. Patient is returned into the supine position. Then wait for 15–20 min after which the patient is placed in the lithotomy position for the endourological procedures.

Table 1 The details of the indication for day case endourology in males and females.

Indications	No. of males (%)	No. of females (%)	Total
Haematuria	98 (22.3)	57 (47.8)	155
Bladder outlet obstruction	101 (23.0)	11 (9.2)	112
Urethral stricture	87 (19.8)		87
Check cystoscopy	57 (13.0)	03 (2.5)	60
LUTS-storage symptoms	19 (4.3)	05 (4.2)	24
Vesico-vagina fistula		17 (14.3)	17
USS bladder mass/bladder tumour	16 (3.6)	03 (2.5)	19
Urinary incontinence	05 (1.1)	12 (10.1)	17
Pre-prostatectomy assessment	10 (2.3)		10
Post-prostatectomy obstruction	10 (2.3)		10
Urethral rupture	07 (1.6)		07
An-ejaculation	05 (1.1)		05
NFK on IVU/USS-hydronephrosis	03 (0.7)	02 (1.7)	05
USS impacted ureteric stone	02 (0.5)	03 (2.5)	05
Neurogenic bladder	04 (0.9)		04
Faecouria	03 (0.7)		03
Meatal/urethral warts	03 (0.7)		03
Pre-kidney transplant	03 (0.7)		03
Post-kidney transplant JJ stent removal	03 (0.7)		03
USS bladder stone		02 (1.7)	02
Post-prostatectomy UTI	02 (0.5)		02
Ejaculatory duct cyst	01 (0.2)		01
Removal JJ stent post-incision of ureterocele		01 (0.8)	01
Ectopia vesica		01 (0.8)	01
Sacral agenesis		01 (0.8)	01
Colo-vesical fistula		01 (0.8)	01
Haemospermia	01 (0.2)		01
Total	440	119	559

Data presented as numbers, with percentages in parentheses.

NFK, non-functioning kidney; USS, ultrasound; IVU, intra-venous urogram; UTI, urinary tract infection; LUTS, lower urinary tract symptoms; JJ, double pig tail stent.

The surgical trainees are taught this technique while assisting the consultant urologists.

Results

In total, 559 patients had day case endourological procedures and this constituted 28% of the total urological procedures performed in the study period. The overall age ranged from 10 to 88 years with a mean of 52.1 years \pm 17.6 standard deviations. The males were older with a mean age of 53.7 years than the females with a mean age of 46 years. The male to female ratio was 4 to 1.

Eighty five percent of the caudal anaesthesia was administered by senior urologic surgical trainees.

The indications for day case endoscopy (Table 1) in 440 males include bladder outlet obstruction ($n=101$, 23.0%), haematuria ($n=98$, 22.3%), urethral stricture ($n=87$, 19.8%), and check cystoscopy for patients as previously treated bladder tumours ($n=57$, 13.0%). While in the 119 females, they are haematuria ($n=57$, 47.9%), vesico-vagina fistula ($n=17$, 14.3%), and urinary incontinence ($n=12$, 10.1%).

Four hundred and thirty eight patients (78.4%) had diagnostic endoscopy mainly urethrocystoscopy ($n=222$, 39.7%), cystoscopy alone in 116 patients (20.8%), cystoscopy with biopsy in 46 (8.2%) and urethroscopy alone in 43 (7.7%) (Table 2). Therapeutic endoscopy was performed in 121 patients consisting of direct visual internal urethrotomy (DVIU) in 86 cases, cystolitholapaxy in 10, retrograde rigid endoscopic alignment (RREA) in 5, removal of double J-stent and endoscopic valve ablation in one each. Eight patients had

DVIU combined with urethral dilatation and 12 urethroscopies was combined with urethral dilatation. Three DVIU, two RREA and one urethrocystoscopy were abandoned due to protracted urethral bleeding.

The diagnostic value of day case endourological procedure is shown in Table 3; 142 cases of urethral strictures and their locations as against the 87 cases suspected. In both sex the commonest causes of haematuria ($n=155$) are bladder tumour (males, 41; females, 33), benign prostate enlargement ($n=19$), upper urinary tract diseases in the females ($n=14$) and bleeding prostate cancer ($n=10$).

In Table 4, benign prostate enlargement was responsible for bladder outlet obstruction (BOO) in 60% of cases, followed by bladder neck stenosis (22%) in the men. While in the females of the 11 cases of BOO, 6 were due to meatal stenosis, obstructing extra-vesical mass ($n=3$) and bladder neck stenosis ($n=2$). Seventeen vesico-vaginal fistulae were confirmed endoscopically among other diagnosis in Table 5.

In Table 6, caudal anaesthesia was administered in 443 patients and topical 2% xylocaine jelly with sedation in 86 patients. Twenty-nine patients had failed caudal block that was augmented with sedation using intramuscular pentazocine (30 mg) and intravenous diazepam 10 mg. This constituted 5.2% failure rate of caudal anaesthesia.

Discussion

In this review, endourological procedures constituted 28% of the total urological procedures performed during the study period. This

Table 2 Types of endourological procedures.

Procedures	Males	Females	Total (% of 559)
Diagnostic endourological procedures performed			
Urethrocystoscopy	181	41	222 (39.7)
Cystoscopy alone	64	52	116 (20.8)
Cystoscopy + biopsy	27	19	46 (8.2)
Urethroscopy alone	43		43 (7.7)
Urethroscopy + urethral biopsy	03		03 (0.5)
Cystoscopy + ureteric cannulation	02	01	03 (0.5)
Urethroscopy + prostate biopsy	02		02 (0.2)
Cystoscopy + vaginoscopy		01	01 (0.2)
Urethroscopy abandoned ^a	01		01 (0.2)
Cystoscopy \pm ureteric cannulation abandoned		01	01 (0.2)
Total	323	115	438 (78.4)
Therapeutic endoscopic procedures performed			
DVIU	86	86 (15.4)	
Urethroscopy + dilatation ^a	10	02	12 (2.1)
Cystolitholapaxy	08	02	10 (1.8)
RREA	05		05 (0.9)
DVIU abandoned ^a	03		03 (0.5)
RREA abandoned ^a	02		02 (0.4)
Urethrocystoscopy abandoned ^a	01		01 (0.2)
Removal of JJ stent	01		01 (0.2)
Endoscopic valve ablation	01		01 (0.2)
Total	117	04	121 (21.6)

Note: DVIU, direct visual internal urethrotomy; RREA, rigid retrograde endoscopic alignment; JJ, double pig tail stent. Data presented as numbers, with percentages in parentheses.

^a Failed endoscopic procedure.

Table 3 Causes of haematuria (*n* = 155) and types of urethral strictures diagnosed in males and females.

Male	<i>n</i>	%	Female	<i>n</i>	%
Bleeding bladder tumour	41	41.8	Bleeding bladder tumour	34	59.6
Bleeding benign prostate	19	19.4	Upper urinary tract haematuria	14	24.6
Bleeding prostate cancer	10	10.2			
Haemorrhagic cystitis	08	8.2	Haemorrhagic cystitis	08	14.0
Upper urinary tract haematuria	08	8.2			
Schistosomiasis	07	7.1	Schistosomiasis	01	1.8
Benign prostate + bladder stone	05	5.1			
Total	98	100	Total	57	100
Urethral strictures in male			(<i>n</i> = 142)		
Bulbar urethral stricture					99
Penile urethral stricture					12
Post-urethroplasty stricture					10
Recurrent urethral stricture					10
Post-internal urethrotomy stricture					04
Peno-bulbar stricture					03
Pan-urethral stricture					03
Post-prostatectomy stricture					01
Total					142

%, percentage; *n*, number of patients.

is higher than what was previously reported from Nigeria of 20% [4] and 25% [6].

Bladder outlet obstruction due to benign prostate enlargement is a major indication for urethrocystoscopy in this review, and this compares favourably with the experiences at Osogbo and Ile-Ife [4,6]. In addition, a reasonable number of our patients had bladder neck stenosis as the second most common cause of BOO requiring urethrocystoscopy on a day case basis as part of the overall evaluation. Virtually all the bladder neck stenosis was

complications of previously performed transvesical prostatectomy, during which efforts at haemostasis often require significant bladder neck ligatures.

In this review, 142 patients with urethral strictures were identified, although only 87 of the patient had a pre-procedure suspicion of a urethral stricture. DVIU was successfully carried out in 86 of these patients at the same time. In a previous study in this unit about a decade ago, 40 patients with urethral strictures were treated with internal optical urethrotomy (I.O.U.) over a 5-year period [7].

Table 4 Causes of bladder outlet obstruction and endoscopic findings of check cystoscopy in males and females.

Male	(<i>n</i> = 101)	Female	(<i>n</i> = 11)	
Bladder outlet obstruction (<i>n</i> = 112)				
Obstructing BPH	61 (60)	Meatal stenosis	06 (55)	
Bladder neck stenosis	22 (22)	Obstructing extra-vesical mass	03 (27)	
Posterior urethral valve	08 (8)	Bladder neck stenosis	02 (18)	
Obstructing prostate cancer	05 (5.0)			
Meatal stenosis	05 (5.0)			
Total	101 (100)	Total	11 (100)	
Male	<i>n</i>	%	Female	<i>n</i>
Check cystoscopy (<i>n</i> = 60)				
Patent urethra	22	38.6		
Recurrent bladder tumour	08	14.3	No recurrent bladder tumour	03
Prostate residual post-TURP	07	12.3		
Small capacity bladder	05	8.8		
Urethral warts and polyps	05	8.8		
Anejaculation	04	7.0		
Foreign body in bladder, prostate and urethral	03	5.3		
End stage renal disease pre-transplant	02	3.5		
Non-functioning kidney on IVU	01	1.8		
Total	57	100		03

Data presented as numbers, with percentages in parentheses. BPH, benign prostate hypertrophy; *n*, number of patients. TURP, transurethral resection of prostate gland; IVU, intravenous urogram; %, percentage.

Table 5 Other endoscopic diagnosis (*n* = 90).

Male	<i>n</i>	%	Female	<i>n</i>	%
Bladder mass (tumour)	16	38.0	Vesico-vaginal fistula	17	35.4
Bladder stone	08	19.0	Small capacity bladder	05	10.4
Urethral rupture	07	16.7	Bladder mass (tumour) 04	8.3	
Impacted ureteric stone	03	7.1	Bladder stone	04	8.3
Post-prostatectomy incontinence	02	4.8	Uretero-vaginal fistula	04	8.3
Double JJ stent	02	4.8	Impacted ureteric stone	03	6.2
Prostato-rectal fistula	02	4.8	Uretero-vaginal fistula	02	4.2
Entero-vesical fistula	01	2.4	Cystocele	02	4.2
Urethral cancer	01	2.4	Normal bladder	02	4.2
			Double JJ stent	01	2.1
			Left ectopic ureter	01	2.1
			Ectopia vesica	01	2.1
			Sacral agenesis	01	2.1
			Vaginal atresia	01	2.1
Total	42	100		48	100

JJ, double pig tail ureteric stent; *n*, number of patients.

Minimal invasive approach to the treatment of bladder stones has significantly reduced the morbidity related to the treatment of bladder calculi [8]. A total of 10 patients had endoscopic cystolitholapaxy in this review using the stone punch (Storz). Other minimally invasive techniques to treat bladder calculi include cystolithotripsy and laser lithotripsy [9]. The low level of these techniques of treatment in our environment in the past has been due mainly to lack of requisite equipments [4].

The novel technique of rigid retrograde endoscopic realignment (RREA) for treating traumatic posterior urethral disruption was previously reported from Ibadan with a success rate of 80% in the initial 5 patients [10]. In this review, 5 of 7 patients were treated by RREA giving a success rate of 71%. The RREA has become an established technique in our practice with an acceptable outcome.

Onhauser, in 1934 reported the safety, effectiveness, and economic value of caudal block in 21 patients; 14 of which had urological procedures and the remaining proctology [11]. All the patients were given premedication with barbital, a popular sedative at the time. This review, confirms that caudal anaesthesia is quite effective whether given alone or with sedation. The urological senior trainees administered the caudal block anaesthesia in 85% of the cases. The ability of these senior trainees to perform caudal block anaesthesia significantly remove the burden on specialist anaesthetists who are extremely scarce in our environment.

Also, performing cystoscopy under caudal block anaesthesia in the day case unit reduces the overall cost of the procedure compared to performing the procedure in the main hospital theatre (62.5 USD versus 625 USD).

In this study, six procedures namely; three direct visual internal urethrotomies, two rigid retrograde endoscopic alignments and one urethrocystoscopy were abandoned due to protracted urethral bleeding.

Current, endoscopic procedures performed are mainly lower urinary tract because the main indications are lower urinary tract disease. However, five cases of impacted ureteric stones were treated though minimal invasive technique would be preferred [10].

Table 6 Anaesthesia administered.

Anaesthesia	Male	Female	Total	Percentage (%)
Caudal alone	24	81	443	79.2
Topical + sedation	53	33	86	15.4
Caudal + sedation	24	05	29	5.2
General anaesthesia	01	0.2		
Total	440	119	559	100%

Data presented as numbers; %, percentages.

The limitation of this study was that the impacted lower ureteric stones were treated by cystoscopic incision at the ureteric orifice. We are looking forward to introducing endoscopic cystolithotripsy, commencing ureteroscopic surgeries and percutaneous nephrolithotripsy in future.

In conclusion, there is a steady increase in therapeutic lower urinary tract day case endourological practice. The caudal anaesthesia is cheap, safe and beneficial to the patient. The urologic surgical trainee can become versatile in the administration of caudal anaesthetic technique.

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