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Future developments in urologic day surgery

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This study was performed to assess the changes occurring in the field of urology with developments in outpatient surgery during a five year period. Using ICD-9-CM code, data for all urology procedures performed in the main operating rooms, day surgery, and laser center operating rooms of a large general hospital was collected for the years 1987–92. A substitution index (SI) was determined as the ratio of the number of outpatients to the total number of procedures and expressed as a percentage. Changes in the SI reflect the degree to which emphasis has shifted from conventional inpatient to outpatient surgery. Twenty-six per cent of urology procedures were being performed on an outpatient basis in 1987, and this increased to 42% by 1992. When broken down according to organ, the greatest increase in SI from 1987–92 was for the kidney (57%) and the least, the penis (2%), with ureter, urethra, testes and scrotum all revealing intermediate, but significant, increases (27%, 28% and 24%, respectively). This paper demonstrates that, as in other fields, urology has experienced a marked increase in outpatient surgery. With developments in surgical and anesthetic techniques, financial pressures, changing physician and patient attitudes and technological advances, further increases in urology outpatient care can be expected.

Key words: Urologic surgery, outpatient

Introduction

Major changes have occurred and are occurring in health care delivery, and urology has certainly been in the forefront of these developments, especially with increasing utilisation of outpatient surgery[1,2]. About 10–15 years ago the only urology procedures routinely being performed on an outpatient basis were cystoscopy, vasectomy and circumcision. Virtually all other renal, bladder, urethral, scrotal and penile procedures were done on an inpatient basis.

About 8–10 years ago several publications described modifications of techniques so that the majority of scrotal and penile procedures could be performed on an outpatient basis. At that stage it was suggested that with improving technology, other diseases such as benign prostatic hyperplasia, renal calculi and stress incontinence may also be managed largely on an ambulatory basis[1,2].

This paper analyses changes that occurred at a large private hospital during a five year interval, so that this may help to predict future developments in urologic day surgery.

Materials and methods

The hospital, as of 1993, is a 962 bed hospital with 21 main operating rooms, and 21 day surgery/laser rooms. A Same Day Surgery Center was opened in 1986 and therefore January 1987 was chosen as the starting point. Computerised data for all urology procedures performed in the main operating rooms, day surgery and laser center operating rooms were collected for the years 1987 and 1992. These were coded using the standard ICD-9-CM procedure codes and included all procedures performed on the kidney, ureter, bladder, urethra, prostate, penis, testes and scrotum. The number of procedures performed as an outpatient, inpatient and total was assessed. Following the recommendations of Colomer et al., a substitution index (SI) was determined and expressed as a percentage. The substitution index is the ratio of the number of outpatient procedures to the total number of procedures performed within a given time and expressed as a percentage SI = Outpatient/total × 100. The changes in the SI thus reflect the degree to which emphasis has shifted from conventional inpatient to outpatient treatment on a broad basis and also for a given procedure[3].

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Table 1. Site of urology procedures 1987–92

	1987 (n)	*1992* (n)	*% Change*
Inpatient	3496	3261	↓ 6.1
Outpatient	1227	2343	↑91
Outpatient % of total procedures (SI)	26	42	↑16

Results

Overall in 1987, 4723 urology procedures were performed, of which 3496 were inpatient and 1227 outpatient, i.e. 26% of total procedures were performed on an outpatient basis (SI = 26%). In 1992 the total was 5604 procedures with 42% being done on an outpatient basis (SI = 42%). The absolute number of inpatient procedures thus decreased 6.1% whereas outpatient procedures increased by 91% compared to 1987 (Table 1).

When the procedures were broken down according to organ, there was an overall increase in both numbers of outpatient procedures performed and the SI. The greatest absolute increase in the SI from 1987 to 1992 was for the kidney (57%) and the least the penis (2%). Ureter, urethra, testes and scrotum revealed increases in outpatient procedures of 27%, 28% and 24%, respectively (Table 2). Overall numbers of inpatient procedures generally decreased except for the kidney, penis and prostate which increased 36%, 1% and 11%, respectively, whereas outpatient numbers increased in all from 10% for the bladder to more than 140-fold for the kidney (Table 3).

Discussion

The field of urology has contributed significantly to the development of outpatient surgery[1,2]. In 1992 42% of all urology procedures were being performed on an outpatient basis at a large hospital with an established Same Day Surgery Center. This compares to the national average for all surgical procedures of 50%. Thus from 1987–92 there had been a greater than 90% increase in the absolute numbers of urology procedures being performed on an outpatient basis. Colomer et al. reported from Spain that the overall SI for all operations from 1990–92 was 48%, with urology showing the highest value of all specialties of 80%[3]. This high figure in their study is primarily due to the fact that only in recent times were circumcision, vasectomy and cystoscopy being done on an outpatient basis, whereas there has been a longer tradition of this at other centers.

Despite the marked increase in outpatient surgery, a significant number of procedures at our hospital were still being performed on an inpatient basis in 1992. It is suggested that minor changes in patient and doctor attitudes, as well as surgical and anesthetic techniques may permit many of these to be performed on an ambulatory basis.

There appear to be four main reasons for the development and increase in outpatient surgery in all fields, especially in urology, namely financial incentives, advances in surgical and anesthetic techniques, developments in technology and changes in attitude.

Financial factors have been a major incentive towards outpatient surgery. In a recent survey, hospital CEOs predicted that outpatient services will account for nearly half of hospital net patient revenues by the year 2000[4]. Leading factors contributing to this increase in outpatient care are Medicare, prospective payment and an increasing reliance on managed care plans which encourage, presumably, less expensive outpatient services[5]. It has been shown that outpatient surgery costs 40–60% less than the same procedure performed on inpatients[6,7]. Patients benefit directly from reduced costs for those self-pay procedures such as vasectomy reversal, which may not be covered by health insurance and indirectly from reduced time off work.

An important recent development in anesthetics is the use of the rapid short acting anesthetic agent propofol, often used in conjunction with the more established agent fentanyl[8,9]. Propofol is a new intravenous hypnotic agent. Its major advantage is that it produces hypnosis rapidly and smoothly, usually within 40 s from the start of the injection and there is rapid recovery from anesthesia. These new agents, together with developments of techniques for local anesthetic nerve block greatly facilitate outpatient surgery[10,11].

Many surgical procedures in urology have been adapted to being better performed on an outpatient basis, including vasovasostomy, hydrocelectomy, spermatocelectomy, penile prosthesis, varicocelectomy, orchiopexy, bladder neck suspension and even transurethral resection of the prostate[6,12,13].

Technological advances are also contributing significantly to patients being managed on an outpatient basis. The most stunning of these are the developments for treating urinary tract calculi. A decade ago virtually all renal and ureteral calculi were managed with either open or endourologic procedures requiring days or weeks of inpatient care. In the current series 83% of extracorporeal shockwave lithotripsy (ESWL) and 53% of ureterscopic calculus removal was performed on an outpatient basis, the remainder requiring only short periods of hospitalisation.

Treatment of benign and even some malignant disease of the prostate is also moving into the realm of outpatient surgery with advances in stents, laser prostatectomy, hyperthermia, pyrotherapy and brachytherapy[16–21].

One of the most significant reasons for the increase in outpatient surgery is the changing attitudes of patients, surgeons and administrators. It is now realised that all gain when a procedure can safely be performed on an outpatient basis. Patients benefit because the experience is much more pleasant and positive than being admitted to a hospital. They appreciate the greater accessibility of many of the units, the scheduling convenience, friendliness of the staff, quality of care, savings and early return to work. Surgeons benefit by working in an environment basically designed for healthy patients. They enjoy prac-

Table 2. Total urology procedures by organ

	1987			1992			
Procedure	*Inpatient*	*Outpatient*	*SI (%)*	*Inpatient*	*Outpatient*	*SI (%)*	*Absolute change in SI (%)*
Kidney	222	3	1.3	302	429	58.7	↑57
Ureter	183	33	15.3	122	90	42.2	↑27
Bladder	968	794	45.1	735	870	54.2	↑ 9
Urethra	271	109	28.7	215	282	56.7	↑28
Prostate	567	101	15.1	629	219	25.8	↑11
Penis	1206	54	4.3	1220	79	6.1	↑ 2
Testes & scrotum	79	133	62.7	58	374	86.6	↑24

Table 3. Percentage change in number of procedures by organ over the period 1987–92

	Inpatient	*Outpatient*
Kidney	36%↑	>140×
Ureter	33%↓	173%↑
Bladder	24%↓	10%↑
Urethra	21%↓	159%↑
Prostate	11%↑	46%↑
Penis	1%↑	181%↑
Testes & scrotum	27%↓	117%↑

ticing quality care in a pleasant environment, as well as the time saving afforded by close scheduling and minimal paperwork. Medical administrators are realising the tremendous cost savings and financial benefits of outpatient surgery.

It is thus predicted that in the future there will be an even greater utilisation of ambulatory surgery facility by urologists. This will come about because of increasing financial pressures, advances in surgical and anesthetic techniques, developments in technology and changes in attitudes of both patients and urologists. As Jarrett has stated "By the end of this century, the question will not be whether a patient is suitable for treatment on an ambulatory basis, but whether there are any indications for admission"[22].

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