IS THERE A NEED FOR ROUTINE INDWELLING CATHETER AFTER CAESAREAN SECTION

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SYNOPSIS

The routine use of an indwelling catheter for a period of 24 hours after caesarean section was evaluated. Ninety seven percent of patients did not need an indwelling catheter as they voided urine unassisted. The morbidity defined by urine microscopy in those with urinary symptoms was significantly higher in the patients who had an indwelling catheter. The existing practice of prescribing antibiotics without culture and antibiotic sensitivity test on the basis of urine microscopy resulted in 27.2% of the indwelling catheter group being treated for urinary tract infection (UTI) as opposed to 10.5% in the no catheter group (p 0.001). The prophylactic use of indwelling catheter for 24 hours after caesarean section is unscientific, unnecessary and leads to significantly greater incidence of urinary tract infection.

INTRODUCTION

There is dearth of scientific evidence to the efficacy or safety of several procedures performed by the obstetricians (1). Cochrane (2) rated obstetrics as the least scientifically based speciality within medical practice. In a systemic evaluation of 86 studies in the perinatal field published in four major scientific journals in 1979, Tyson et al (3) concluded that in only 10% were the recommendations for clinical practice justified by the evidence presented. The latter conclusion has been challenged and labelled unjustified (4). In the light of such controversy one has to differentiate two important therapeutic aspects. Firstly, when a clinical problem exists various modalities of its management should be evaluated in order to identify the most compatible with scientific evidence. Secondly in the absence of an immediate clinical problem but in anticipation of one, any therapeutic procedure undertaken as a prophylactic measure should be examined. The anticipated complications may never materialize or they may be trivial in magnitude. Further more, the prophylactic measure should be scientifically evaluated to justify its adoption as well as to ascertain whether or not complications which may arise in its application would outweigh the expected benefits.

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Strict urological practice demands that instrumentation should be avoided unless it is absolutely necessary. Though one should avoid catheterisation during caesarean section the procedure facilitates surgery on the lower uterine segment; thus it appears justified to drain the bladder via a catheter during surgery. A similar justification cannot be made for the introduction of an indwelling catheter postoperatively. Though many centres in the world no longer indulge in this old tradition, certain centres still continue the practice. It is based on the belief that bruising and oedema of the bladder caused by surgery near the uterovesical area and lower abdominal pain will lead to retention of urine. Retention of urine may lead to atony of the bladder and infection if not identified and relieved. The lack of adequate staff to help patients pass urine at regular intervals after surgery may lead to retention and failure in identifying retention. Based on this fear it is routine practice in our hospital to have an indwelling catheter for 24 hours or more after surgery. This practice entails the cost of the Foley's catheter and urine bags, urinary symptoms in patients and antibiotic therapy if the urine microscopy suggests infection. An analysis of caesarean sections done over five months in 1983 and 1984 illustrates the magnitude of this problem (Table 1).

TABLE 1
NUMBER OF CAESAREAN SECTIONS, URINE MICROSCOPY AND RESULTS

Months	Total L.S.C.S.	Urine microscopy for urinary symptoms		Patients with 10 leucocytes per high power field	
		n	%	n	%
July '83	279	147	52.7	46	16.5
August '83	219	88	40.2	31	14.2
October '83	247	171	69.2	54	21.9
November '83	246	94	38.2	59	24.0
January '84	218	97	44.5	32	14.7
Total	1209	597	49.4	222	18.4

It is routine practice in our institution to administer antibacterial drugs to the majority of post caesarean section patients with urinary symptoms who exhibit greater than 10 leucocytes per high power field in a sedimented midstream urine sample, without urine culture or an antibiotic sensitivity test. Over the 5 month period 49.4% of patients with indwelling catheter after caesarean section had urinary symptoms and 18.4% had urine microscopy suggestive of urinary tract infection (UTI) and were presumably treated. Our study aimed to find out whether an indwelling catheter after surgery was necessary: the incidence of patients who develop acute retention of urine after surgery if indwelling catheter was not utilised was ascertained. We also attempted to find out whether there was a significant reduction in the number of patients treated with antibiotics if no catheter was utilized in the postoperative period.

MATERIALS AND METHODS

Over a ten week period in May, June and July 1984, all patients who had caesarean section in the University Unit, Kandang Kerbau Hospital were studied. The specialist performing the surgery was given the option of having an indwelling catheter or not for his patient for the first twenty-four hours. The catheter draining urine during surgery was removed at the end of the operation in those patients in whom it was decided not to have an indwelling catheter. The patients who had an indwelling catheter because of severe oliguria due to haemorrhage, pre-eclampsia or those who had bladder injury were excluded from the study. Patients who developed acute retention in the group who had no catheter had intermittent catheterization twice and, if catheterization was necessary for the third time, an indwelling catheter was placed for 24 hours. All cases were examined 24 to 48 hours postoperatively to exclude a distended bladder due to retention. A computer coding sheet was commenced with data on the number of episodes of acute retention, and the number who needed a subsequent indwelling catheter. Various urinary symptoms in the postoperative period were evaluated in both the indwelling catheter group and the group having no catheter. Those who developed urinary symptoms had urine microscopy and if the leucocyte count was high they were given antibiotic therapy. The results were analysed using the students test.

RESULTS

One hundred and eighty eight consecutive caesarean section cases were studied of which fifty five cases had an indwelling catheter during surgery and for 24 hours afterwards and 133 had catheter only during surgery. One out of the fifty five (1.8%) who had an indwelling catheter had retention of urine after its removal at the end of 24 hours and needed another 24 hours of continuous drainage. From the no catheter group 3% had catheterization once, none had it twice and 3% had indwelling catheter and continuous drainage for 24 hours on their third episode of acute retention (Table 2). The urinary symptoms in the two groups are given in Table 3 which shows no significant difference. There were no cases with increased frequency of micturition or haematuria.

Patients who developed symptoms had urine microscopy performed on a drop of centrifuged mid stream sample of urine. A count of more than 10 leucocytes per high power field (40 × 10) was considered abnormal and most of them were treated with antibiotics. Table 4 shows the reasons for antibiotic therapy in the

TABLE 2
INCIDENCE OF ACUTE RETENTION OF URINE

Number of catheterisations	Indwelling catheter group n = 55	%	No catheter group n = 133	%
Nil	—	—	125	94.0
Once	—	—	4	3.0
Twice	—	—	0	0.0
Thrice/Indwelling catheter	1	1.8	4	3.0

TABLE 3
POSTOPERATIVE URINARY SYMPTOMS

Symptoms	Catheter n = 55	%	No Catheter n = 133	%
None	50	91.0	126	94.7
Dysuria	5	9.0	7	5.3

TABLE 4
REASONS FOR POSTOPERATIVE ANTIBIOTIC THERAPY

Antibiotic Therapy	Indwelling catheter group		No catheter group		p value
None	22	40.1	81	61.0	p 0.01
For UTI	15	27.2	14	10.5	p 0.001
For reasons other than UTI	18	32.7	38	28.5	N.S.

188 patients studied. Analysis shows a significantly higher proportion of antibiotic usage in the indwelling catheter group for urinary tract infection.

DISCUSSION

In the current trend of examining cost effectiveness of health care delivery, accurate estimates reflecting the morbidity and cost of hospital-acquired infections are increasingly important. Catheter-associated urinary tract infection is the commonest example in this group. It has been estimated that there is a 5-10% risk of bacteriuria developing with each day of catheterization (5).

In our study 12 out of 133 (9.0%) patients who had no indwelling catheter developed postoperative retention of urine. Four (3.0%) of these responded to conservative measures and encouragement and passed urine. Four (3.0%) had to be catheterized once after the conservative approach failed none needed catheterization twice and another four (3.0%) needed catheterization for the third time, and in them an indwelling catheter and continuous drainage was used for 24 hours. This was not significantly different from the 1.4% incidence of recatheterization and continuous drainage from the indwelling catheter group. Based on the fact that 94% of the patients had no urinary retention and 3% needed catheterization only once, we feel that prophylactic use of an indwelling catheter and continuous drainage in post caesarean section patients in anticipation of patient developing acute retention in the absence of other indication(s) is not justified. Further, such practice could be expected to lead to an increased incidence of urinary tract infection.

In a patient who develops postoperative non obstructive acute retention of urine the choice between an indwelling catheter, intermittent catheterization or use of medical means is debatable. In such situations Badenoch (6) quoted a 70% success with the conservative or medical approach. When conservative and medical means fail an indwelling catheter is best avoided (7) as the organisms can easily group alongside the catheter in the urethral secretions and ascend into the bladder via the internal urethral orifice kept open by the indwelling catheter. There is little doubt that the primary site of lower urinary tract infection is the urethra (8) and intermittent catheterization or continuous drainage are the main predisposing factors. Fergusson and Williams (9) suggested that acute retention with no obstruction should be dealt with by intermittent catheterization once or twice and to resort to using an indwelling catheter if it becomes necessary to catheterize the patient more than twice. In the latter case, a closed drainage system and prophylactic antibiotic therapy is recommended to reduce the incidence of asymptomatic bacteriuria. Williams and Reeves (10) considered the existing controversies to the choice of method and urged the need for a carefully organized trial to assess the merits of an indwelling catheter as opposed to intermittent catheterization. Our observations, though in obstetric patients, were similar to that of Aitken (11), who found urinary tract infection to be the most frequent complication of gynaecological surgery and was due to the use of catheter

The urethral catheter as a cause of urinary tract infection in pregnancy and puerperium has been well documented (12). Bacteriuria has been associated with midtrimester abortion, prematurity, hypertension and anaemia (13). Nearly 25% of patients with bacteriuria have been reported to develop pyelonephritis compared to the 1.4% risk in the normal population (14, 15, 16, 17). Considering the immediate and long term complications of bacteriuria and the possibility of bacteriuria being caused by catheterization, prophylactic catheterization of any form seems unjustified.

Our criterion for diagnosing urinary tract infection was based on the presence of more than 10 leucocytes per high power field (10 × 40). Normal individuals have 0-2 leucocytes per high power field (19), or less than 10 leucocytes per ml (20). In pregnancy though the number of such cells will be more than in non pregnant individuals, more than 10 leucocytes per high power field indicates the presence of some inflammatory disease, specially in the presence of symptoms. Our study shows that in the indwelling catheter group large number of patients are being treated based on the microscopic examination of urine and presenting symptoms for urinary tract infection.

In conclusion we feel that the prophylactic use of an indwelling catheter for 24 hours after caesarean section for prevention of acute retention is not necessary as 97% of such patients had no difficulty of whom only 3% needed catheterization once. This prophylactic practice seems unjustified as it also increases the incidence of postoperative urinary tract infection. We recommend that in cases of acute non-obstructive urinary retention following surgery conservative measures should be used and intermittent

catheterization done at least twice before the use of an indwelling catheter.

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