

Cesarean Section without Urethral Catheterization

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Abstract

Introduction: Urethral catheterization is done as a routine procedure in cesarean section. It is associated with great discomfort, high incidence of urinary tract infection, delayed ambulation and longer hospital stay.

Objectives: To determine the feasibility and safety of cesarean section without urethral catheterization.

Materials and Methods: A prospective, observational study was carried out from April 2012 to March 2013, in the Department of Obstetrics and Gynaecology, CMH Dhaka and IBN Sina Hospital Dhaka among 65 patients who had undergone cesarean section without catheterization. There were some limitations of this study. We had excluded previous cesarean from our study, so the results of this study cannot be generalized.

Results: First void discomfort was not significantly associated without the use of indwelling catheter. Hospital stay was shorter (94% was discharged on 3rd post operative day). None of the patients had bladder injury. Mean duration of surgery was 45 minutes (44%) and ambulation time 11-14 hours (60%). Average estimated blood loss was 500 ml (41%) and time of 1st voiding was 5-8 hrs (58%). Need for catheterization was significantly low (3%).

Conclusion: Cesarean section can be done safely without urethral catheterization with reduced morbidities.

Key-words: Cesarean section, Urethral catheterization, Urinary tract infection.

Introduction

Urethral catheterization is an irritating and painful procedure most of the time and sometimes even

patients want it to be performed after anaesthesia is given for surgery. Traditionally a patient undergoing cesarean section is catheterized with the belief that empty bladder results in better exposure of the lower uterine segment and lowers the risk of bladder injury during surgery. Bruising and edema caused by surgery near the uterovesical area and lower abdominal wall lead to retention of urine that predisposes to urinary tract infection (UTI)¹.

Following delivery of baby, full bladder does not allow proper retraction of uterus leading to uterine atonicity and post partum hemorrhage (PPH) and so it is a routine practice to keep urethral catheter for 24 hours after surgery. However several studies have shown that cesarean section performed without using urethral catheter also is as safe as the traditional approach¹⁻⁴.

Instead, some additional benefits have been reported such as low rate of UTI, less voiding discomfort, early ambulation and shorter hospital stay. The aim of this study was to determine the feasibility of carrying out cesarean section without catheterization in terms of intraoperative safety, prevalence of UTI, post-operative need for urethral catheterization, prevalence of first voiding discomfort and prevalence of post partum hemorrhage (PPH).

Materials and Methods

A prospective, observational study was carried out from April 2012 to March 2013, in the Department of Obstetrics and Gynaecology, CMH Dhaka and IBN Sina Hospital Dhaka among 65 patients who had undergone cesarean section without catheter. Written informed consent was obtained from all the participants. Patients with a singleton pregnancy planned for elective as well as emergency cesarean

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section and who had voided satisfactorily immediately prior to arrival in operation theatre were included in the study. Exclusion criteria were patients with previous cesarean section or prior pelvic surgery, those with clinical features of obstructed labor, with protracted labor for >800 min, grandmultipara, polyhydramnios, ante partum hemorrhage, maternal cardiac disease, severe pre-eclampsia and eclampsia, febrile morbidity, receiving morphine related analgesia, with established pre-operative UTI. Detailed history, physical examination and investigation reports were recorded on a preformed sheet. Pre-operative investigations including urine for routine, microscopic and culture sensitivity was sent. Patients were asked to void just before entering the operating room. All patients received a single dose of intravenous Ceftriaxone 1 gram as prophylactic antibiotic just before the commencement of surgery and were operated under spinal anesthesia. Cesarean section was performed by senior author.

Oxytocin 10 Units was given in a running intravenous drip of Hartman's solution following the delivery of baby. Intramuscular injection ergometrin 0.2 mg was used when required. The times taken for surgery, PPH, per operative blood loss, total amount of intravenous fluids used during surgery were recorded. Adequate analgesics were used as necessary. The routine postoperative nursing protocol was followed. Patients were asked to void only upon feeling the urge, rather than according to a time limit. If the urge to void was reported at a time when mobilization was not possible, a bedpan was given. If this failed, helping measures like adequate analgesia and privacy was provided. If the desire to void was reported later, when mobilization was possible, they were helped to a nearby toilet. If still patient had difficulty in passing urine after 6 hours or if abdominal examination shows palpable urinary bladder Foley catheterization was done⁶.

Soakage of vulval pads and presence of fresh bleeding or clots were considered as PPH. Time of beginning of ambulation was noted considering the beginning of surgery as the zero time. Discomfort in first voiding was defined as burning, urging and difficulty at voiding time. The time of first voiding was

taken as the interval between start of the operation and first voiding. The operation time was defined as the time from the onset of surgery to the completion of skin closure. The length of hospital stay was defined as the time interval between the onset of surgery and hospital discharge. Urine sample for routine examination was done on the first postoperative day and urine for culture and sensitivity test was sent on the second day. UTI was diagnosed by the presence of clinical features (dysuria, frequency, loin pain, pyrexia) with either the presence of 100 bacteria per ml of urine with ≥ 10 leucocytes per high power field, or $\geq 10^5$ colony forming unit of pathogenic organisms per ml of urine on culture¹⁻². After discharge from the hospital, patients were advised for follow up if symptoms of UTI developed or with the urine culture report. All statistical calculations were performed using Microsoft Excel version 7 (Microsoft Corporation, NY, USA) and SPSS 11 (SPSS Inc., Chicago, IL, USA) statistical programs.

Results

The population taken in this study was similar to population of traditional group in terms of age and period of gestation. The mean duration of surgery was 45 minutes which indicates that avoidance of catheterization does not affect the ease of surgery (Table-I). Among the patients, bladder was retracted with Doyen's retractor and operating field was easily visualized. There was no need of needle aspiration of bladder as the operating field was not obliterated. Neither there was any case of bladder injury (Table-VII). Among the 65 patients, 24 voided within 2 to 4 hours, 38 of them voided in 5 to 8 hours and 3 after six hours. The mean time (mean \pm SD) taken for first void was 6 ± 2 hours. The first voided volume in most of the cases (54.2%) was in the range of 100- 200 ml and the mean volume (mean \pm SD) was 180.51 ± 61.18 ml (Table-III). None of the uncatheterized patients had PPH (Table-VII). Mean estimated blood loss was 450-500 ml, 69.23% (Table-II). Mean ambulation time was shorter in the patients without urethral catheter though not statistically significant (Table-IV). Hospital stay was significantly shorter in patients without catheter than in those with catheter (Table-V).

Table-I: Duration of operation (n=65).

Duration	Number	Percent (%)
40 min – 50 min	55	84.61
55 min – 60 min	10	15.39

Table-II: Estimated blood loss during operation (n=65).

Blood loss	Numbers	Percent (%)
350ml – 400ml	7	10.77
450ml – 500ml	45	69.23
550ml – 600ml	13	20

Table-III: Time of first voiding and volume after operation (hours) (n=65).

Time	Volume	Numbers	Percent (%)
2-4 hr	200-400 ml	24	36.92
5-8 hr	500-700 ml	38	58.46
18-21 hr	900-1000 ml	3	4.61

Table-IV: Time of ambulation (Hours) (n=65).

Time	Numbers	Percent (%)
6-10 hr	18	27.69
11-14 hr	39	60.00
17-24 hr	8	12.30

Table-V: Time of discharge (n=65).

POD	Numbers	Percent (%)
3 rd POD	61	93.84
4 th POD	4	6.15

Table-VI: UTI among the patients (n=65).

Morbidity	Numbers	Percent (%)
Cystitis	1	1.5
Pylonephritis	0	0

Table-VII: Peroperative & Postoperative complication (n=65).

Complication	Comment	Number	Percent (%)
Injury adjacent structures	Yes	0	0
	No	65	100
PPH	Yes	0	0
	No	65	100
Need for catheterization	Yes	3	4.61
	No	62	95.38

Discussion

Principal causes of maternal morbidity increases dramatically after cesarean section are pain, immobility, puerperal infections and hemorrhage. Among infections UTI is the commonest and is mostly related to urethral catheterization. It accounts for >80% of nosocomial UTI and greater post-operative pain⁶. Bacteriuria develops in at least 10-15 % of the hospitalized patients with an indwelling urinary catheter and the risk of infection is approximately 3-5 % per day of catheterization⁷. UTI accounts for 35-45% of all nosocomial infections. While most of the episodes are asymptomatic or produce minor sequelae due to spread of infections to the contiguous organs, 2-4% of cases may develop life threatening septicemia^{8,9,10,11}. Lower prevalence of UTI in non-catheterised group in this study was similar to the study by Bartz et al¹². The increased incidence of UTI associated with cesarean section is probably almost entirely due to catheterization and the best way to prevent it would therefore be to avoid catheterization^{13,14}. Traction on the catheter either inadvertently or by the patient traumatizes the bladder neck, accounting for most episodes of hematuria. Accidental intraurethral distention of the Foley catheter balloon may lead to pressure necrosis and urethral rupture¹⁵.

The volume of urine produced during cesarean section did not produce a significant degree of distension and difficulties or interference during surgery. These results are in agreement with the results obtained by Senanayake, AM Nasr et al and Lang FJ et al^{2,3,16}. Even at the end of surgery, the bladder did not distend to a level that would interfere with abdominal wall closure. Although the dictum is that the bladder should be catheterized to protect it from intraoperative injury, it could be argued that a slightly filled bladder may be better demarcated and therefore more easily identified intraoperatively². In the event of accidental cystotomy, urine would flow out, drawing attention to the damage. This would be a more reliable and earlier indicator of cystotomy than other indirect methods, such as use of an indwelling catheter to detect postoperative hematuria². In this study, there was no case of accidental cystotomy and aspiration of the bladder to relieve distension at surgery was not required in any of the cases. So catheterizations of bladder probably have failed to make any difference to the

safety of surgery and might have been an unnecessary intervention. The mean time taken for first void was 6 ± 2 hours in this study which was almost similar (5-8 hours in 40.9% and 8-11 hours in 42.5%) to the results of J. Goreishi⁴. It is shorter than the mean time for first void after operation in trial of Senanayake H (8.70 ± 2.37 hrs) and Nasr AM et al^{2,3} (7.64 ± 3.61). Distress catheterization was needed in 4.6% of the patients without indwelling catheter which is same as that in J.Ghoreishi's⁴ study (4.4%). Six percent of uncatheterized patients required recatheterization in study conducted by Arulkumaran et al¹. None of the patients without indwelling catheter had PPH and this was much lower than the rate of 30% as given in literature. In a study by Senanayake H there were 6.68% cases of postpartum uterine atony causing hemorrhage². The lower incidence of PPH in our study may be because multiple pregnancies, prolonged labour which are the risk factors for PPH were excluded from this study. Patients in this study ambulated earlier though statistically insignificant. It was 11-14 hours in this study and 13.4 ± 9.9 hours in study of Nasr Am et al³. Patients in our set up were reluctant to go to toilet even they were able to ambulate. Rather they preferred to use bed-pen. This could explain why less number of patients had difficulty in voiding, despite delayed ambulation.

Conclusion

Treating a patient is not only treating a disease. This also means reducing the morbidity of the patient, reducing the economical burden of the patient and hospital as well. Avoidance of catheterization can serve these purposes. The routine use of an indwelling catheter for cesarean section is not necessary and with the increasing incidence of this surgery, the benefits of avoiding catheterization are likely to be substantial. Cesarean section can thus be done safely without the routine use of urethral catheter with reduced morbidities.

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