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Merits and Demerits of Using Indwelling Catheter in Lower Segment Caesarean Section

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ABSTRACT

Background: The reported incidence rates of urinary retention after caesarean section vary from 3.3 to 39.2%. The use of indwelling urinary catheters has been implicated as a main cause of urinary tract contamination occurring in 1.7 per 1000 of caesarean delivery patients, and accounting for greater than 80% of nosocomial UTIs and greater postoperative pain.

Objectives: The aim of this study was to assess whether carrying out CS without urethral catheterization is safe in terms of intraoperative safety, prevalence of UTI, and the rate of the first voiding discomfort.

Methods: A prospective case control study done at L.D. hospital, GMC Srinagar over a period of one year from December 2018 to December 2019. 200 pregnant women without any medical / surgical complication undergoing emergency / elective CS were randomly selected by use of table of random numbers and allocated to two groups. Caesarean section was done under SA by the same surgeon using conventional technique. The duration of surgery was defined as interval between skin incision to skin closure by standard clock in OT.

Results: Women in both groups had no significant difference in age, parity and indication for cesarean section. They received the same pre and postoperative treatment. Time to first void was 4-8 hrs in 62 patients and more than 9 hrs in 38 patients in NC group. Discomfort at first void was seen in 34 patients of NC group and 59 of C group. Of the C group 30 had mild and 4 had severe discomfort. Among the C group, 45 had mild and 14 had severe discomfort at first void. The incidence of UTI in C/S after 48hrs was 4/100 among NC group and 17/100 among C group. Febrile morbidity was seen in 1 patient of NC group and 8 of C group. Hospital stay among NC group was 3.7 days and among C group was 4.3 days.

Conclusion: Non-use of urinary catheter at caesarean section causes less pain at first void less time to ambulate and less chance of urinary tract infections with a slightly increased chance of postoperative urinary retention.

Key Words: Caesarean section, Voiding discomfort, Voiding discomfort, Urinary tract infections

INTRODUCTION

An indwelling urinary catheter is a routine part of most surgeries including cesarean section (CS) performed today, inserted prior to surgery and remains 12 – 24 h post operation¹. The rationale for catheterization is to prevent bladder injury, intra-operative difficulties and postoperative urinary retention in the belief that an empty bladder is at less risk of damage during surgery than one that is distended^{2,3}.

The reported incidence rates of urinary retention after caesarean section vary from 3.3 to 39.2%, depending on the

definitions used^{4,5} and catheterization has been consistently associated with urinary tract infections (UTIs)^{6,7}. Bacterial access is gained to the bladder intraluminally by entering catheter system at catheter collecting tube junction or patients own gut flora may colonize the periurethral area and reach bladder via external surface of catheter⁸. The use of indwelling urinary catheters has been implicated as a main cause of urinary tract contamination^{9,10} occurring in 1.7 per 1000 of cesarean delivery patients¹¹, and accounting for greater than 80% of nosocomial UTIs¹² and greater postoperative pain¹³. UTIs may lead to local and systemic morbidity, as well as

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serious complications, such as septic shock, respiratory insufficiency, secondary bloodstream infection, fluid balance disorders, chronic renal insufficiency and death, and related increases in healthcare costs¹⁴⁻¹⁸.

Clinical trials have been performed comparing the safety and feasibility of urinary catheterization use and non-use during caesarean section^{2,19,20}.

OBJECTIVE

To assess whether carrying out caesarean section without urethral catheterization is safe in terms of intraoperative safety, prevalence of UTI, and the rate of the first voiding discomfort.

METHODS

A prospective case control study done at L.D. hospital, GMC Srinagar over a period of one year from December 2018 to December 2019. 200 pregnant women without any medical /surgical complication undergoing emergency/elective CS were randomly selected by use of table of random numbers and allocated to two groups.

Group 1 (NC): Non Catheterized (NC)

Group 2 (C): Catheterised for 24hrs postoperative.

The groups were comparable in terms of age, parity, indication of CS, type of CS, anaesthesia and same operating surgeon.

Exclusion criteria

1. Medical disorders associated with pregnancy e.g. GDM, PIH, CKD etc.
2. Previous LSCS/ surgical complication.
3. Rupture of membranes > 4hrs
4. Pre-existing UTI

All patients received a single dose of antibiotics before surgery after cord clamping which as per hospital protocol was continued for 2 days postoperatively.

Parameters noted were;

- 1) Duration of surgery.
- 2) Time to ambulation
- 3) Postop retention
- 4) Time of first void
- 5) Discomfort at first void
- 6) UTI [urine routine / morning (U-R/M), urine culture sensitivity (U – C/S) done on urine sample at end of 24hrs post op in both groups.
- 7) Duration of hospital stay.

Caesarean section was done under SA by the same surgeon using conventional technique. The duration of surgery was defined as interval between skin incision to skin closure by standard clock in OT. Postoperatively patients were moni-

tored closely and were kept fasting for a minimum of 8 hrs and received tramadol as analgesia for first 24 hrs. Discomfort at first void was defined as burning, urging, and painful voiding.

For assessing level of discomfort visual analog scale (VAS) was used. VAS uses numerical rating of 0-10 as was explained to each patient. The patient chooses a number from 0-10 that best described her pain intensity. Accordingly, three categories were divided (i) No discomfort VAS -0, Mild discomfort (VAS: 1-3) and Moderate discomfort (VAS: 4-10). Time of first void was defined as time interval between removal of urinary catheter and first spontaneous void.

The time of first ambulation was defined as interval between onset of surgery and time patient first ambulated. Urine of all patients was sampled immediately before and 24 hrs post-surgery and subjected to routine and microscopy exam and culture and sensitivity. Antibiotics were changed according to culture report. Criteria for discharge were: (i) Patient afebrile for 24hrs, (ii) On oral medications, (iii) Accepting orally well (iv) bowel and bladder function normal.

Statistical Method: The recorded data was compiled and entered in a spreadsheet (Microsoft Excel) and then exported to data editor of SPSS Version 20.0 (SPSS Inc., Chicago, Illinois, USA). Continuous variables were expressed as Mean±SD and categorical variables were summarized as frequencies and percentages. Chi-square test was applied for comparing categorical variables and continuous variables were compared by Student's independent t-test. A P-value of less than 0.05 was considered statistically significant. All P-values were two tailed.

RESULTS

200 women enrolled in the study were assigned to two groups. Women in both groups had no significant difference in age, parity and indication for cesarean section. They received the same pre and postoperative treatment. Duration of surgery was almost similar in both groups.

Initiation of ambulation was 9 hrs in NC group and 15 hrs in C group. This was statistically significant with a p value of < 0.001. Postoperative retention was seen in 2 women among the NC group for which catheterization was done on the first postoperative day.

Time to first void was 4-8 hrs in 62 patients and more than 9 hrs in 38 patients in NC group. Discomfort at first void was seen in 34 patients of NC group and 59 of C group. Of the C group 30 had mild and 4 had severe discomfort. Among the C group, 45 had mild and 14 had severe discomfort at first void. The difference was statistically significant with a p value of < 0.001.

The incidence of UTI in C/S after 48 hrs was 4/100 among NC group and 17/100 among C group. Febrile morbidity was seen in 1 patient of NC group and 8 of C group. Hospital stay among NC group was 3.7 days and among C group was 4.3 days.

Table 1: Comparison of various parameters between two groups

	Group NC [n=100]	Group C [n=100]	P-value
Duration of surgery (Minutes)	35.9±8.32	37.1±7.43	0.283 ^a
Initiation of ambulation (Hours)	9.5±4.08	15.2±3.79	<0.001 ^{*a}
Hospital stay (Days)	3.7±2.83	4.3±3.56	0.189 ^a
Postoperative urinary retention	2%	-	-
UTI seen on C/S 48 hrs	4%	17%	0.006 ^{*b}
Febrile morbidity	1%	8%	0.041 ^{*b}
Time to first void	4-8 Hours > 8 Hours	-	-
Voiding Discomfort	34%	59%	
Mild	30%	45%	<0.001 ^{*b}
Moderate-severe	4%	14%	

^aP-value by Student's independent t-test, ^bP-value by Chi-square test

^{*}Statistically Significant (P-value<0.05)

Table 2: Demographic characteristics of study patients

	Group NC [n=100]	Group C [n=100]	P-value
Age (Years)	32.4±5.72	33.7±6.19	0.125 ^a
Parity	Para 1 Para 2-4	74% 26%	69% 31%
Previous LSCS	Yes No	61% 31%	67% 33.3%

^aP-value by Student's independent t-test, ^bP-value by Chi-square test

DISCUSSION

The study confirms that catheterisation during cesarean section is not necessary. We found that non placement of indwelling catheter during LSCS was associated with significantly fewer UTIs, a lower rate of discomfort at first voiding, less time until first voiding and ambulation and shorter duration of hospital stay. Duration of surgery was comparable in

both groups. The patients in NC group ambulated early. This was due to restriction of mobility with the indwelling catheter because of pain and fear of accidental expulsion in the C group²¹. The C group had a longer hospital stay because of post op UTI and associated fever. Discomfort at first void was seen more in group C patients (59%) with 14% patients experiencing moderate to severe discomfort. Majority of patients in group NC had mild discomfort at first void. In a study by Arlyn et al 83% of group C patients had discomfort at first void of which 28% had severe discomfort²². The urethral catheter as a cause of UTI in pregnancy and puerperium is well known. Bacteriuria associated with indwelling catheter in the postoperative period has been found to be an important cause of hospital acquired UTI. It was seen in 14% of patients of group C and the results were significant. Febrile morbidity was seen in 1% of patients in NC group as compared to 8% patients in group C.

A major rationale for catheterising urinary bladder was to avoid postoperative retention. However in our study non-use of urinary catheterisation during cesarean section was not associated with an increase in urinary retention. Urinary retention was seen in 2% patients in group NC and was probably due to inadequate analgesia and fear of early ambulation. Hence indwelling catheterisation leads to increased incidence of UTI. More discomfort at first void and delayed ambulation. In cases where required, proper aseptic catheter insertion technique, closed drainage maintenance, avoiding prolonged catheterisation and proper catheter care can reduce the risk of acquiring UTIs.

CONCLUSION

Routine use of indwelling catheter for cesarean section in haemodynamically stable patients is not necessary. Use of catheter is associated with increased incidence of urinary infection, more discomfort at first voiding, immobility and increased cost of healthcare delivery services.

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