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Original Research Article

Post catheterization urine analysis in lower-segment caesarean section patients

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ABSTRACT

Aims : To assess the effect of duration of catherization on urine analysis and on first voiding time after removal of catheter in postoperative period after caesarean section.
Materials and Methods: Patients who have undergone caesarean section from June 2020 to June 2021. The catheter was in-situ post operatively. Urine sample from each patient was analyzed for routine microscopy before catheterization as well as after removal of catheter. Midstream clean catch urine was collected in sterile container and sent for urine routine analysis. As per duration of catheter in situ we divided the patients in four groups
Patients with catheter in situ- up to 24 hours, 24 to 48 hours, 48 to 72 hours, > 72 hours.
Factors like urgency, frequency, dysuria and time required to void first time after removal of catheter were taken into consideration. > 4 pus cells in microscopy were taken as UTI.
Results: Urinary urgency and frequency were 91% in patient with catheter in situ for >24 hours.
Out of 50 with duration of 1 to 3 hours catheter in situ, 48 had moderate dysuria, 10 with duration > 3 hours catheter in situ had dysuria in post- operatively. Of 35 with > 2 days of catheter in situ, 31 had UTI in postoperatively. Time taken to void the bladder initially was increased after removal of catheter in postoperatively.
Conclusion: We have concluded that use of catheter for >24 hours is associated with increased incidence of urinary infection and more discomfort at first voiding.

1. Introduction

Caesarean section is the most common obstetric surgical procedure, with more than one-third of pregnant women having lower-segment Caesarean section.[1] Emerging evidence suggests that omitting the use of urinary catheters during and after Caesarean section could reduce the associated increased risk of urinary tract infections[1,2] urethral pain, voiding difficulties after removal of the catheter, delayed ambulation, and increased hospital stay.[3] Immediate removal of urinary catheter after elective cesarean section is associated with lower risk of urinary infection and earlier postoperative ambulation.[2] With respect to these known facts we have undertaken study to explore further effects of catheter in situ in postoperative period after caesarean section. So, objectives of this study were to assess the effect of duration of catherization on urine analysis and on first voiding time after removal of catheter in postoperative period after caesarean section.

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2. Aim

To assess the effect of duration of catherization on urine analysis and on first voiding time after removal of catheter in postoperative period after caesarean section.

3. Materials and Methods

Study population pregnant females who have undergone caesarean section for some indications and were catheterized. Post operatively under sterile condition. The catheter was in situ in post operatively during postoperative period.

3.1. Inclusion criteria

1. All pregnant females undergoing caesarean section in above mentioned study period.

3.2. Exclusion criteria

1. Pregnant female undergoing caesarean section and having urinary tract infection before catheterization.
2. Pregnant females not willing to participate in the study.

3.3. Sample size

We have included all pregnant females with above mentioned inclusion and exclusion criteria in given study period. So, in given study period we got 100 pregnant females according our inclusion and exclusion criteria.

3.4. Settings and design

This was prospective study conducted from June 2020 to June 2021 in the Department of obstetrics and gynecology Dr D Y Patil hospital and research center.

3.5. Methodology

Approval from institute ethics committee of our institute was obtained before starting of the study. An informed consent was obtained from all the patients fulfilling with the above inclusion and exclusion criteria. Each participant was asked about history of present illness, clinical signs and symptoms and so forth. Urine sample from each patient was analyzed for routine microscopy before catheterization as well as after removal of catheter. Midstream clean catch urine was collected in sterile container and sent to lab for urine routine analysis. According to duration of catheter in situ we divided the patients in four groups as follows:

A: Patients with catheter in situ up to 24 hours.

B: Patients with catheter in situ from 24 hours to 48 hours.

C: Patients with catheter in situ from 48 hours to 72 hours.

D: Patients with catheter in situ for above 72 hours.

Also, factors related to urinary pattern like urgency, frequency, dysuria and time required to void first time after removal of catheter was taken into consideration while collecting data and analysis. On an average more than 4 pus cells in urine routine microscopy were considered as presence of urinary tract infection.

3.6. Statistical analysis

Data collected with the help of structured and pretested proforma was entered in excel. Result was presented in the form of tables and graph. Data was analyzed with help of software named SPSS Version 22. Chi square test and likelihood ratio was used to check significance. Analysis of variance was used for comparison of means of quantitative variables. P value of 0.05 used as cut off for significance.

4. Results

Table 1 shows that as duration catheter in situ increases, urinary urgency increases. Proportion of patients with urinary urgency were almost 100 percent in patients with catheter in situ for more than 48 hours. This difference in proportion of patients with urinary urgency according to duration of catheter in situ was statistically significant.

Table 2 shows that as duration catheter in situ increases, urinary frequency increases. Proportion of patients with urinary frequency were almost 100 percent in patients with catheter in situ for more than 24 hours. This difference in proportion of patients with urinary frequency according to duration of catheter in situ was statistically significant.

Table 3 shows that out 40 patients with up to 1 hour duration of catheter in situ 39 were having dysuria. Out of 50 patients with duration of 1 to 3 days of catheter in situ 48 were having moderate dysuria. Out of 10 patients with duration of more than 3 days of catheter in situ all were having dysuria in post- operative period. This difference in proportion of patients with dysuria according to duration of catheter in situ was statistically significant.

Table 4 shows that as duration catheter in situ increases, proportion of patients with pus cells in urine were increased. Out of 35 patients with more 2 days of duration of catheter in situ 31 patients were having urinary tract infection in postoperative period. This difference in proportion of patients with urinary tract infection according to duration of catheter in situ was statistically significant.

Table 5 shows that there was no statistically significant difference in mean age between groups formed according to duration of catheter in situ. So, these groups were comparable with respect to age. There was significant difference in postoperative first voiding time after removal of catheter. As duration of catheter situ increases, time taken to void the bladder first time was increased after removal of catheter in postoperative period.

Table 1: Distribution according to postoperative urinary urgency and duration of catheter in situ

Urinary urgency	Duration of catheter in situ				Total
	A	B	C	D	
Absent	39	4	1	0	44
Present	1	21	24	10	56
Total	40	25	25	10	100

Likelihood ratio= 97.45, p<0.01

Table 2: Distribution according to postoperative urinary frequency and duration of catheter in situ

Urine frequency	Duration of catheter in situ				Total
	A	B	C	D	
No	39	4	1	0	44
Yes	1	21	24	10	56
Total	40	25	25	10	100

Likelihood ratio= 97.45, p<0.01

Table 3: Distribution according to postoperative dysuria and duration of catheter in situ

Dysuria	Duration of catheter in situ				Total
	A	B	C	D	
Mild	39	0	1	0	40
Moderate	1	25	22	1	49
Severe	0	0	2	9	11
Total	40	25	25	10	100

Likelihood ratio= 153.75, p<0.01

Table 4: Distribution according to postoperative post-operative pus cells in URM and duration of catheter in situ

Pus cells in URM	Duration of catheter in situ				Total
	A	B	C	D	
≤ 4 Cells	30	14	4	0	48
>4Cells	10	11	21	10	52
Total	40	25	25	10	100

X^2= 31.75, P<0.01

Table 5: Comparison of mean age of study subjects and postoperative mean voiding time according to duration of catheter in situ

Parameter		Duration of catheter in situ				P value
		A	B	C	D	
Age	Mean	24.70	24.48	24.56	25.10	0.96
	SD	3.26	3.34	3.41	3.81	
Postoperative voiding time	Mean	69	100.8	117.60	237	<0.001
	SD	15.49	21.00	45.76	63.95	

5. Discussion

This was cross-sectional study conducted from to at obstetrics and gynecology department of tertiary care center from Western Maharashtra. Study was conducted with objectives to assess effect of duration of catherization on urine analysis and on first voiding time after removal of catheter in postoperative period after caesarean section.

In our study we found that as duration catheter in situ increases, urinary urgency increases. Proportion of patients with urinary urgency was 91% in patient with catheter in situ for more than 24 hours. This difference in proportion of patients with urinary urgency according to duration of catheter in situ was statistically significant. Also, we found that as duration catheter in situ increases, urinary frequency increases. Proportion of patients with urinary frequency was 91% in patient with catheter in situ for more than 24 hours. This difference in proportion of patients with urinary urgency according to duration of catheter in situ was statistically significant. Out of 50 patients with duration of 1 to 3 hours of catheter in situ 48 were having moderate dysuria. Out of 10 patients with duration of more than 3 hours of catheter in situ all were having dysuria in post-operative period. This difference in proportion of patients with dysuria according to duration of catheter in situ was statistically significant.

The discomfort caused by prolonged catheterization could lead to increased urinary frequency in patients with cesarian section. These findings were similar to the study by Onile et al. Magdy R. Ahmed in their study found that one week after removal of the catheter, it was found that 16– 22% of patients in group in which catheter is removed after 24 hours had symptomatic lower UTI (dysuria, frequency and urgency) while 2.9% of the same group had symptoms suggestive of nephritis (fever and loin pain) and these findings corresponds with our study findings.[4] Samina Sultana (2018) in their study stated that among the catheterized group, 45 had mild and 14 (out of 100) had severe discomfort at first void and these findings were similar to our study findings.[5] AM Nasr (2009) found in their study that regarding patient pain and discomfort, there was a statistically significant association between the degree of discomfort and the use of in dwelling catheter (P<0.001; Table 5).[6]

In our study we have observed that as duration of catheter in situ increases, proportion of patients with pus cells in urine were increased. Out of 35 patients with more 48 hours of duration of catheter in situ 31 patients (88.57%) were having urinary tract infection in postoperative period. This difference in proportion of patients with urinary tract infection according to duration of catheter in situ was statistically significant. ORIJI Vaduneme Kingsley (2018) in his study found that incidence of urinary tract infection was higher among women who had their urethral catheter removed after 24 hours (13.8%) when compared with those who had their catheter removed after 6 hours (5.6%), immediately after surgery (3.1%) and those who voided spontaneously before surgery (4.4%). Though percentage in this study was significantly less as compared our study comparative results were similar.[7] Magdy R. Ahmed (2018) in their study found that One week 16–22% of patients in group B (removal of catheter after 24 hr).[4] Samina Sultana (2018) in their study found that the incidence of UTI was 17% in catheterized group as compared to non-catheterized group (4%).[5] AM Nasr (2009) also showed the incidence of UTI which was 5.7% in the catheterized group 24 h after operation and 2.9% one week after the operation, vs 0.5% (P<0.001) 24 h after operation and 0% (P<0.001) one week after the operation in the non-catheterized group.[6] This higher proportion of urinary tract infection undergoing cesarian section in women who had their urethral catheter removed after 24 hours could be explained by increased formation of biofilms.[8–10]

In present study there was no statistically significant difference between groups formed according to duration of catheter in situ. So, these groups were comparable with respect to age. There was significant difference in postoperative voiding time after removal of catheter. As duration of catheter situ increases, time taken to void the bladder was increased after removal of catheter in postoperative period. Mean time required to void at first time in our study was 1.76 hour. AM Nasr (2009) in their study observed that the mean times to first voiding were significantly different between the two groups (catheterized vs non-catheterized) (P<0.001) and this was more in catheterized group.[6] Divya Pandey (2015) observed in their study that time interval was taken after catheter removal till first voiding (Ta), the catheterized group patients took significantly lesser time i.e., 2.163±0.88 hours versus 6.486±0.82 hours in non-catheterized group and this finding was contradictory to our study findings.[11]

6. Conclusion

In our study we have concluded that use of catheter for more than 24 hours is associated with increased incidence of urinary infection and more discomfort at first voiding.

7. Source of Funding

None.

8. Conflict of Interest

The authors declare no conflict of interest.

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