Evaluation of the Use vs. Non Use of Urinary Bladder Catheter during Caesarean Delivery: A Randomized Controlled Trial

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Abstract: Urinary bladder catheterization is an important maneuver either if it is done in surgery or for another need (e.g. urine retention or need of monitoring of urine output). The urinary bladder is sterile by its nature as urine is a sterile fluid except in cases of urinary tract. In this context, given the need to further evaluate the pragmatic use of indwelling catheters in hemodynamically stable women undergoing Caesarean delivery, by performing a prospective, randomized controlled trial (RCT**)**. This study was done to investigate prospectively the effects of indwelling urinary catheter placement during Caesarean delivery, trying to avoid or minimize the possibility of urinary tract infection and discomfort offering a better quality of life for those patients. This randomized controlled trial was performed at the maternity wards of the Department of Obstetrics and Gynecology at Helwan General Hospital from September2018 to March2019. A total of 100 patients, fulfilling the inclusion criteria, were enrolled in this study. They were allocated randomly into one of two groups (1 and 2). All women were encouraged to void before being taken to operating theatre table. In Group 2 (n=50), women were routinely catheterized. The catheter was removed approximately 6-8 hours after surgery whereas, in group 1 (n=50), Caesarean section was carried out without urethral catheterization. Procedure was instituted in the standard manner via modified Pfannenstielincision. In all cases, transverse lower uterine segment incision was performed. In the recovery room patients were monitored closely. All participants in group 1 were instructed to void upon feeling of the urge. All women were investigated for urinary tract infection by Midstream sample of urine (MSU) for analysis and culture (just before discharge). Outcome of interest included intraoperative injury to bladder, other intra operative complications and postoperative complications. Postoperative complications were categorized into urinary retention, incidence of atony of uterus, and urinary tract infection. There is no significant difference between cases with and without catheter regarding anthropometric measure, gestational age, operation time and causes of Caesarean section anatomy of the uterus ($p > 0.05$). No bladder injuries were reported in either group. The mean value of pus cells in urine is significantly higher among patients with catheter than patients without catheter ($p< 0.001$). The results of this trial demonstrate that routine urinary catheterization during Caesarean delivery in hemodynamically stablewomen is unwarranted. The un catheterized group demonstrated a reduction in incidence of UTI, shorter hospital stay, potentially less cost with more patient satisfaction without increasing intraoperative difficulties.

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1. Introduction

Urinary bladder catheterization is an important maneuver either if it is done in surgery or for another need (e.g. urine retention or need of monitoring of urine output). The urinary bladder is sterile by its nature as urine is a sterile fluid except in cases of urinary tract infections (UTIs) (**Saint et al., 2005).**

Urinary bladder catheter plays an important role in surgeries especially pelvic surgeries. It prevents postoperative urine retention due to pain and provides an accurate method for calculation of postoperative urine outcome. This helps to make balance between the fluid intake and urine output. Also in diagnosis of postoperative dehydration which will be diagnosed by low urine output. This may lead finally to acute tubular necrosis of the kidney and acute renal failure (**Saint et al., 2005).**

Empirical urinary bladder catheterization is commonly performed during Caesarean section as it is widely believed that its placement can improve the exposure of the lower uterine segment at the time of surgery, prevents urinary bladder injury and avoids postoperative urinary retention **(Nasr et al., 2009).**

Caesarean section carries with it, all complications of any other major surgery (for example: anesthesia, infection, bleeding) also in addition to injury of major organs and vascular structures at the site of incision. These include, but are not limited to, injury to major vessels (for example, uterine artery) and the urinary bladder, especially after prolonged labor where the urinary bladder is displaced caudally, also after previous Caesarean delivery where

scarring obliterates the vesico-uterine space, or where a vertical extension to the uterine incision has performed **(Al Shahrani, 2012).**

The use of urinary bladder 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 more than 80% of nosocomial urinary tract infections and more postoperative pain **(Kunin, 2008)**

Moreover, there is a direct cost of using indwelling urinary catheters, in addition to the indirect costs posed by a possible increased risk of UTIs. Finally, patient discomfort and early return to daily activities is a factor that is sometimes not considered by the attending doctors when they make the decision whether to use catheter or not **(Nasr et al., 2009).**

Delivery by Caesarean section has been part of human culture since ancient times, but it was limited. It was not until much later that intervention with a good outcome for mother and baby became possible **(Meikle et al., 2005).**

Caesarean delivery rates have risen steadily. In some parts of the world this has surpassed a ratio of 1:3 when compared to vaginal delivery also it may reach 40-45 % of all deliveries **(Meikle et al., 2005).**

In this context, given the need to further evaluate the pragmatic use of indwelling catheters in hemodynamically stable women undergoing Caesarean, by performing this prospective, randomized controlled trial (RCT) **(Nasr et al., 2009).**

Aim of the work

The aim of this work is to investigate prospectively the benefits and risks of indwelling urinary bladder catheter placement during Caesarean delivery.

2. Methodology

This study was done to investigate prospectively the effects of indwelling urinary catheter placement during Caesarean delivery.

Randomized controlled trial was performed at the maternity wards of the department of Obstetrics and Gynecology of Helwan General Hospital from September 2018 to March 2019.

Type of Patient:

The patients of the study are the pregnant women going for Caesarean section either a primi gravida or a multi para.

- **Inclusion criteria:**

1- Elective Caesarean delivery.
2- Single pregnancy.
3- Absence of urinary tract infections.
4- Body mass index less than or equals 30 Kg/m2.

- **Exclusion criteria:**

1- Previous pelvic or abdominal operations except previous C.S.
2- Known urinary tract anomalies.
3- Presence of vaginal bleeding or infections.
4- Pregnancy with placenta previa.
5- Presence of medical disorders with pregnancy as hypertensive disorders, cardiac or renal diseases.

Randomization:

Total number of (100) cases, fulfilling the inclusion criteria, were enrolled in this study. They were allocated randomly by using opaque closed envelops into one of two groups (1 and 2).

Steps:

1- Full history were taken including personal, obstetrical, gynecological, past and familial history.
2- General and abdominal examination.
3- Consent from all women under study.
4- Ultrasound examination.
5- Measuring of pre and postoperative Hb%.
6- Urine analysis and culture preoperative voiding and postoperative.

The intervention of the study was the application of the urinary catheter and the control will be those women who will not be catheterized. Finally the outcomes which were monitored are (injury of the urinary bladder during surgery – postoperative urine retention or urinary tract infections – post operative uterine atony and postpartum hemorrhage).

All women were encouraged to void before being taken to operating theatre table.

In group 1 (n=50) Caesarean section was carried out without urinary catheterization while in group 2 (n=50), women were routinely catheterized. The catheter was removed approximately 6-8 hours after surgery.

Caesarean sections were performed. Procedure was instituted in the standard manner via modified Pfannenstiel incision in all cases and transverse lower uterine segment incision was performed.

During and after the operation, 2-3 liters of Normal Saline or Ringer lactate solution were infused daily and patients were monitored closely.

At onset of discharge from hospital (12-24 hrs) all women in both groups were asked to provide a postoperative blood sample for Hb% measurement to detect the drop of Hb % to detect if there was uterine atony and degree of post partum hemorrhage. Also urine sample for analysis and culture to detect if urinary tract infections developed, also good assessment of postoperative hospital stay, if prolonged.

Comparison between the results of Pre and Postoperative urine analysis and Hb% of all women was done to detect the effect of catheterization.

The data collected were tabulated & analyzed by SPSS (statistical package for the social science software) statistical package version 1-1.

Quantitative data were expressed as mean & standard deviation (X+SD) and analyzed by applying student t-test for comparison of two groups of normally distributed variables and Mann Whitney U test for non normally distributed ones.

Qualitative data were expressed as number and percentage (No & %) and analyzed by applying chi-square test (X^2).

All these tests were used as tests of significance at $p<0.05$.

3. Results

The results of this staudy were found as follows:

Table 4: Comparison between Group 1 and Group 2 regarding baseline data

	Group 1		Group 2		Independent t-test	
	Mean	**SD**	**Mean**	**SD**	**t**	**p-value**
Age	27.64	7.23	29.20	5.90	0.333	0.740
Parity	1.64	1.69	1.10	1.18	1.165	0.247
B.M.I.	25.73	2.03	27.49	1.35	0.711	0.478
Placenta						
Anterior	5	10.0%	4	8.0%		
Fundal anterior	10	20.0%	18	36.0%		
Fundal posterior	23	46.0%	10	20.0%	9.678	0.046
Fundal	9	18.0%	16	32.0%		
Posterior	3	6.0%	2	4.0%		
Gestational age	39.1	0.79	37.8	0.78	0.729	0.468
Est. ft. wt. (kg)	3.68	0.38	3.33	0.42	0.506	0.614
A. F.I.	7.86	4.54	7.20	4.01	0.770	0.443
Rupture of membranes	15	30.0%	19	38.0%	0.713	0.398

This table shows that all cases were fulfilling the inclusion criteria and there was no major differences between the cases of the two groups regarding the parity, the body mass index, amniotic fluid index and estimated fetal weight.

Table 5: Comparison between Group 1 and Group 2 regarding the preoperative data

Urine analysis	**Group 1**		**Group 2**		**Independent t-test**	
	Mean	**SD**	**Mean**	**SD**	**t**	**p-value**
Proteinuria						
Nil	40	80.0%	41	82.0%	0.065	0.799
Trace	10	20.0%	9	18.0%		
Sugar						
Nil	39	78%	42	84%		
Trace	10	20%	8	16%	1.333	0.513
(+)	1	2%	0	0%		
RBCs / HPF	2.54	0.95	2.68	0.96	-0.733	0.465
Pus cells / HPF	2.58	0.84	2.76	0.94	-1.013	0.313
Urine culture						
no growth	50	100.0%	50	100.0%	NA	NA
Hb.%	10.78	0.90	11.85	0.82	0.290	0.772

This table shows that all cases were fulfilling the inclusion criteria regarding absence of gross proteinuria, heamaturia and urinary tract infections, also there was no evidence of pre operative anemia.

Table 6: Comparison between Group 1 and Group 2 regarding the intraoperative bladder injury.

	Group 1		Group 2		Chi-square test	
	No.	%	No.	%	X^2/*t	p-value
Bladder injury	0	0.0%	0	0.0%	NA	NA

X^2: Chi-square test; *t: Independent t-test

*The above table shows that bladder injury is not affected by application or non application of the urinary catheter.

Table 7: Comparison between Group 1 and Group 2 regarding the Postoperative data

	Group 1 No. (%)	Group 2 No. (%)	Chi-square test	
			X^2/t*	p-value
Urine retention	0 (0.0%)	0 (0.0%)	NA	NA
Uterine Atony	2(4.0%)	2(4.0%)	0.000	1.000
Proteinuria	0(0.0%)	3(6.0%)	3.259	0.196
Pus cells, mean (SD)	2.96 (1.56)	5.26 (4.25)	-3.590*	0.001
Urine culture (positive)	0 (0.0%)	6(12.0%)	6.383	0.012
Hb. %, mean (SD)	10.48(0.96)	10.42 (0.84)	0.289	0.773
Drop of mean Hb% between pre and post operative	0.72	1.08	0.176	0.598

X^2: Chi-square test; t*: Independent t-test.

The above table shows that there is no difference between the two groups regarding urine retention or in postoperative uterine atony and there is no significance in application of catheter.

But there is significant results in case of post operative UTIs between the two groups showing increase in the risk of UTIs with application of catheter in the catheterized group.

Also there is no significant difference in drop of pre and post operative hemoglobin between the two groups.

4. Discussion

Urethral catheterization is a routinely performed procedure before Caesarean section. The purpose of catheterization is that an empty bladder facilitates proper exposure of lower uterine segment. In addition, there is less chance of injury to the urinary bladder during surgery than one that is distended (Yossepowitch et al., 2004).

Urethral catheterization is not without complications both on the short and long term. However, a recent study reports that Caesarean section can be safely and easily accomplished without catheterization (Ghoreshi, 2003).

Urinary tract infection is a significant problem following urethral catheterization in Caesarean section. This is more common when there is a practice of catheterization in the ward prior to Caesarean section in less hygienic circumstances. Moreover, the condition can sometimes becomes lethal as result of pyelonephritis and urosepsis (Turi et al., 2006).

Previously, it was thought that catheterization before Caesarean section prevents postpartum urinary retention and its sequelae. But with growing experience and advancement in knowledge, numerous other causes like prolonged second stage oflabor, and spinal or epidural anesthesia, were identified as causes of urinary retention (Groutz, et al., 2001).

The results of this study showed no significant difference between the two groups in intra operative complications and difficulties also any significant difference in duration of operation. In both groups no bladder injury was demonstrated, but there is increase in rate of UTIs in patients with urinary catheterization.

In 2011 Randomized controlled trials (RCTs) and nonrandomized controlled trials (NRCTs) comparing the use versus nonuse of indwelling urinary catheters in Caesarean section to assess whether it is necessary to place indwelling urinary catheters routinely in Caesarean section, and to determine the effects of this procedure on UTIs, urinary retention, intra-operative difficulties, operative complications, as well as other outcomes (Li et al., 2011).

Two reviewers independently selected the studies and extracted the data. Results from the trials were combined to calculate relative risks (RRs) for dichotomous outcomes and mean differences (MDs) for continuous outcomes, with 95% confidence intervals (CIs) (Li et al., 2011).

Three trials (two RCTs and one NRCT) were included, involving a total of 1084 participants. Compared with the use of indwelling urinary catheters, nonuse had a significantly lower incidence of UTIs [RR 0.08; 95% CI 0.01, 0.64 (study design: RCT); RR 0.10; 95% CI 0.02, 0.57 (study design: NRCT)], a lower rate of discomfort at first voiding (RR 0.06; 95% CI 0.03, 0.12), less time until first voiding (MD -16.81; 95% CI -17.31, -16.31) and less time until ambulation (MD -6.01; 95% CI -6.68, -

5.35); there were no statistically significant differences in the rate of urinary retention [RR 5.00; 95% CI 0.24, 103.18 (study design: RCT); RR 0.74; 95% CI 0.04, 15.18 (study design: NRCT)], operating time (MD -1.10; 95% CI -3.32, 1.12) and rate of intra-operative difficulties (RR 1.00; 95% CI -3.32, 1.12) (Li et al., 2011).

The nonuse of indwelling urinary catheters in Caesarean section is associated with less UTIs and no increase in either urinary retention or intra-operative difficulties. These results suggest that the routine use of indwelling urinary catheters for Caesarean delivery in haemodynamically stable patients is not necessary, and can be harmful. However, better and larger randomized trials are needed to confirm these findings (Li et al., 2011).

The above results and conclusions agrees with the results of this study in spite of the difference between them as this study is a randomized control study only.

In 2009 a multicenter, randomized control trial was performed at the maternity wards of the Departments of Obstetrics and Gynecology at Assiut University and Cairo University to evaluate the use of urinary catheter in Caesarean section (Nasr et al., 2009).

A total of 420 gravid women undergoing Caesarean were prospectively included and randomized to one of two groups in a 1:1 ratio using opaque, closed envelopes that were mixed and chosen at random. Patients were randomized to either the group 1 (uncatheterized group, UG) or group 2 (catheterized group, CG).

The incidence of UTI was increased in the CG. It was 5.7 and 2.9% 24 h and 1 week after operation, respectively (Nasr et al.,2009).

It was noted that the incidence of UTI in the CG was less after 1 week than itwould be after 24 h from the operation and can be explained by prophylactic antibiotics and adequate hydration (Nasr et al.,2009).

There were no significant differences between the two groups regarding patient demographics. Even so, the incidence of UTI was significantly greater in the CG (P<0.001). In addition, mean time to patient ambulation, first postoperative voiding, oral rehydration, intestinal movement and duration of hospital stay were significantly less in the uncatheterized group (UG; P<0.001), with most patients self-voiding without any intervention. Moreover, some intraoperative complications were recorded in the both groups.

Women who were offered Caesarean delivery without use of a urinary catheter were generally pleased and satisfied with this method (Nasr et al.,2009).

The results of this trial demonstrated that routine urinary catheterization during Caesarean delivery in hemodynamically stable women is unwarranted. The un catheterized group demonstrated a reduction in incidence of UTI, shorter hospital stay, potentially less cost with more patient satisfaction without increasing intraoperative difficulties (Nasr et al.,2009).

Results of this study agreed with the current study results and conclusion also it showed more number of cases.

In 2007 a study was conducted at Fatima Bai Hospital for one and half year period from June 2007 to December 2008 evaluating the effect of urinary catheter use in Caesarean section (Shabeen et al., 2010).

One hundred and twenty consecutive patients who underwent Caesarean section were enrolled and randomly assigned into Group A (with catheterization) and Group B (without catheterization).

Main outcome measures were accidental bladder injury peri-operatively (i.e. accidental cystotomy), urinary retention and urinary tract infection (>10 leucocytes on).

Total 60 patients with Mean+SD age of 31.45±8.38 years were included in group A while 60 patients with Mean+SD age of 29.83+8.53 years were included in group B. Accidental cystotomy was not noticed in both groups. Urinary catheterization when carried out preoperatively, had significantly higher rates of urinary tract infection (28.3%) as compared to women in whom preoperative catheterization was not performed (11.7%; p=0.022). Same trend was observed in terms of urinary retention in both groups (p=0.047) (Shabeen et al., 2010).

Urethral catheterization prior to elective Caesarean section seems to be an unnecessary procedure because this may increase the risk of urinary tractinfection. Furthermore, Caesarean section could be carried out safely without urethral catheter on women who are facilitated to empty the bladder prior to shifting her to operating table (Shabeen et al., 2010).

This study is close to the current study in number of participants, mean of their age. The results agree with our results and both outcomes are close and showed increase in the rate of UTIs in catheterized group and also showed no significant difference between the two groups regarding intraoperative complications and postoperative results.

A prospective, randomized controlled trial was carried out from April 2008 to March 2009, in the Department of Obstetrics and Gynecology, B. P. Koirala Institute of Health Sciences, to determine the feasibility and safety of Caesarean section without urethral catheterization (Acharya et al., 2012).

Among 150 patients who had undergone Caesarean section 75 were catheterized and 75 were uncatheterized (Acharya et al., 2012).

First void discomfort was significantly associated with the use of indwelling catheter (OR 6.95, CI 95 %, 3.74 to 12.95; P< 0.001). Significant number of patients with indwelling catheter had signs and symptoms of urinary tract infection (OR 6, CI 95%, 2.59 to 13. 86; P < 0.001) (Acharya et al., 2012).

Positive urine analysis for urinary tract infection was high in catheterized group (P <0.001). Hospital stay was shorter in patients without catheter (p < 0.05). None of the patients had bladder injury. There were no significant differences in duration of surgery and ambulation time between two groups of patients (Acharya et al., 2012).

The results showed that Caesarean section can be done safely without urethral catheterization with reduced morbidities (Acharya et al., 2012).

Also A prospective comparative study was carried out at a private hospital in Colombo, Sri Lanka. A pilot study involving 50 women was carried out to measure the volume of urine obtained at the beginning and at the end of Caesarean section, using an indwelling catheter. In the main study, surgery was carried out without urethral catheterization on 344 women who had voided within the previous hour (Senanayke 2005).

The mean volume of urine collected at the beginning and at the end of surgery was 25.5 and 42.8 mL, respectively. This volume was calculated to be accommodated in spheres of 4.0 and 4.6 cm in diameter, respectively. In the main study, 73% had the bladder distended to a level <3 cm from the lower cut edge of the rectus sheath. In the remaining 27% it was above this level, but covered completely by Doyen's retractor. There were no cases of accidental cystotomy. The difference in the mean time taken for surgery in the two groups was not significant (P=0.30). Distress catheterization was required in two (0.58%). The rest voided after a mean of 8.76 h (SD=2.37). The majority (68.2%) voided in the toilet. The difference in the urinary infection rates between the two groups (6%vs 0.58%) was statistically significant (P <0.05) (Senanayke 2005).

The results showed that Caesarean section without urethral catheterization does not compromise the safety or ease of surgery. It reduces the risk of urinary infection (Senanayke 2005).

Also in 2003 a prospective randomized study was at the Department of Obstetrics and Gynecology, Torfe Hospital Shahid Beheshti, University College of Medicine, Tehran, Iran Was used to determine the effect of urinary bladder catheterization on first-void discomfort, time of ambulation, hospital stay, and urinary tract infection in women undergoing Caesarean delivery (Ghoreshi 2003).

Randomly assigned 270 women delivered by Caesarean section to urinary bladder catheterization or no catheterization by using closed envelops. The study was done on primary and repeated Caesarean deliveries but not on cases with emergency caesarean sections or cases with medical disorders. Prospective methods were used to assess patient discomfort with the first postoperative void after, time of ambulation, time of hospital stay, and need for recatheterization (Ghoreshi 2003).

135 women who did not receive an indwelling urinary catheter after Caesarean delivery, six (4.4%) patients needed post operation urinary catheterization. The time of first postoperative voiding was 8-11 h in 54 (42.5%) of cases. The ambulation time in the uncatheterized group was 6.8 h, vs. 12.9 h in the control group. Uncatheterized patients had a shorter hospital stay. Urinary tract infection was not assessed in this study (Ghoreshi 2003).

The results showed that Routine use of indwelling urinary catheter in Caesarean delivery patients with a stable hemodynamic condition is not necessary (Ghoreshi 2003).

The results of this study agreed with the results of the current study. But there was 4.4% of cases needed post operative urinary catheterization to evacuate the bladder.

In 2001 a study was done to study whether avoidance of the use of an indwelling catheter was associated with intraoperative difficulty or postoperative voiding dysfunction (Joseph et al., 2001).

Patients undergoing elective/repeat, urgent, or emergent Caesarean deliveries were included in the study. All patients were encouraged to void within 30 minutes of the start of surgery. Patients undergoing urgent or emergent Caesarean deliveries were encouraged to void but were not excluded if circumstances did not allow (Joseph et al., 2001).

All patients underwent low transverse Caesarean deliveries with either spinal or general anesthesia. The deliveries were performed in the standard manner with dissection of the bladder off the lower uterine segment and a single-layer uterine closure. Surgical time, time to first void, and number of patients with urinary retention requiring either single in-out catheterization or placement of indwelling urinary catheter were recorded (Joseph et al., 2001).

One hundred and eighteen patients underwent Caesarean delivery during the study period. Sixty (51%) had primary Caesarean sections and 58 (49%) had repeated sections (Joseph et al., 2001).

Spinal anesthesia was administered to 70.3% and general anesthesia to 29.6%. The average surgery time

was 28.5 minutes, and in no case did bladder distention interfere with exposure of the lower uterine segment. There were no intraoperative bladder injuries (Joseph et al., 2001).

The average time to first void was 252.9 minutes (range, 124–599 minutes). Six patients (5%) required urinary catheter drainage. Of those, four had in-out catheterization in the operating room after the procedure and one patient required in-out catheterization at 523 minutes postoperatively and voided on her own 4 hours later. One patient had an indwelling catheter placed 152 minutes after surgery because of vaginal bleeding. This remained in place for 12 hours, and the patient voided 3 hours after removal. All patients ambulated to the bathroom for their first void. There were no cases of urinary tract infection (Joseph et al., 2001).

The results were that the use of an indwelling urinary catheter is an unnecessary part of Caesarean delivery. The absence of the catheter had no effect on surgical exposure of the lower uterine segment. Urinary retention was rarely encountered postoperatively, and the patients ambulated within hours of the surgery. Patients undergoing Caesarean delivery (elective/repeat, urgent, or emergent) can safely avoid the use of an indwelling urinary catheter (Joseph et al., 2001).

Inspite of doing the study on one group with no control group, and including emergency Caesarean sections, the results did not differ from the results of the current study in the non catheterized group for bladder injury, intraoperative complications and even in the duration of operation, there was no big difference and the conclusion agreed with my conclusion. But there was increase in rate of patients need post operative catheterization to empty the bladder which may be related to the use of spinal anaethesia where the patient lose the desire of micturation till the end of anaethesia.

Finally practice of routine catheterization prior to Caesarean section needs to be reviewed skeptically as it is likely to increase the risk of urinary tract infections and retention in women postoperatively.

Conclusion & Recommendation

The primary finding of this study is that using of urinary catheter in Caesarean section in a haemodynamically stable women of single pregnancy is un warranted and the non use of urinary catheter has no effect on the surgical difficulties, or injuring of the urinary bladder and beside that it increases the risk of post operative urinary tract infections and prolonged hospital stay.

So we **recommend** non use of urinary catheter in Caesarean section in a haemodynamically stable women. Also we recommend further evaluation for the pragmatic use of indwelling catheters in hemodynamically stable women undergoing Caesarean delivery with multiple pregnancy or emergency C.S.

Also we have to demonstrate some limitations in this Study including inadequate power to actually examine surgical complications such as bladder or urethral injury. Also the effect of education and culture of the patients on the study especially during writing the consent and collection of the midstream sample of urine.

References

1. Acharya S, Uprety DK, Pokharel HP, Amatya R and Rai R (2012). Caesarean Section without Urethral Catheterization: A Randomized Control Trial. Kathmandu Univ Med J (2012);38(2):18-22.
2. Al-Shahrani Mesfer (2012). Bladder injury during Caesarean section. Bahrain Med Bull (2012); 34:3-7.
3. Gorieche J (2003). Indwelling of urinary catheters in caesarean section delivery. Dept. of OG Torfe Hpt. Shahid Behshti University College of Medicine Tehran, Iran,. (2003) Dec;83(3): 267-270.
4. Groutz A, Gordon D, Wolman I, Jaffa A, Kupferminc MJ and Lessing JB (2001). Persistent postpartum urinary retention in contemporary obstetric practice. Definition, prevalence and clinical implications. J Reprod Med (2001);46:44-8.
5. Harer WB (2000)."Patient Choice Caesarean". American College of Obstetricians and Gynecologists. Evaluation of Caesarean Delivery. Washington, DC: ACOGClin. Rev. (2000);5(2):1,13-16.
6. Joseph F. lang, Jhon C. Bowen and Patricia Strong (20011). Use of endwillingurinary Catheter in Caesarean section. Obstetrics & Gynecology volume 97, issue 4 Supplement 1, April (2001); 66-76.
7. Kunin CM (2006). Urinary-catheter-associated infections in the elderly. Int J Anti-microb Agents. Aug 2006;28Suppl 1: S78-81.
8. Li L, Wen J, Wang L, Li YP and Li Y (2011). Is routin in welling catheterization of the bladder for caesarean section necessary? systematic review. May 2011; BJOG 118(6):774.
9. Meikle SF, Steiner CA and Zhang J (2005). A national estimate of the elective primary Caesarean delivery rate. Obstet Gynecol. 2005; 105: 751-756.
10. Nasr AM, El Bigawy AF, Abdelamid AE, Al-Khulaidi S, and Al-Inany HG (2009). Evaluation of th use vs. nonuse of urinary catheterization

during Caesarean Delivery: a prospective, multicenter, randomized controlled trial. Journal of Perinatology (2009) 29, 416 – 421.
11. Saint S, Kaufman SR and Thompson M (2005). A Reminder to Reduce Urinary bladder Catheterizatin in Hospitalized Patients. Journal on Quality and Patient safety (2005); 31(8): 455-462.
12. Saint Sand Chenoweth CE (2003) Biofilms and catheter-associated urinary tract infections. Infect Dis Clin North Am. Am J M (2003);17:411-32.
13. Senanayke H (2005). Elective caesarean section without urinary catheterization. J Obstet Gynaecol Res. (2005);31(1):32-7.
14. Shabeen Naz Masood, Rabia Qadir, Seema Mumtaz and Yasir Masood (2010). Is It Necessary to Catheterize before Caesarian Section. Pakistan armed forces medical journal, Dec (2010), Issue 4.
15. Turi A, Hanif S, Fasih Q and Shaikh MA (2006). Proportion of complications in patientspracticing clean.
16. Yossepowitch O, Baniel J and Livne PM (2004). Urological injuries during Caesareansection: intraoperative diagnosis and management. J Urol 2004;172:196-9.

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