

A STUDY ON IMPACT OF PARITY AND LABOR DURATION ON THE PREVALENCE OF POST-C-SECTION URINARY RETENTION

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Abstract

Background: This study aimed to assess the impact of parity and labor duration on the prevalence of post-caesarean section (CS) urinary retention. **Materials and Methods:** Observational analytical methods was used in this cross-sectional study in which after calculating sample size, patients who underwent caesarean section were included to find post-delivery urinary retention. **Result:** A total of 56 patients meeting the study criteria were included. Following CS, patients were instructed to urinate spontaneously for 6 hours. Transvaginal ultrasound was performed 24 hours after catheter removal to determine residual urine volume. Urinary retention was defined as a residual urine volume exceeding 200 ml. Among the study participants, 5.8% were found to have urinary retention following CS. Notably, all cases of urinary retention were covert in nature. Labor duration was identified as a significant factor contributing to urinary retention after CS. The mean labor duration in the group with urinary retention was 10.77±15.06 hours, compared to 9.57±9.30 hours in the normal group (p>0.003; RP = 106.00; CI 95% = 6.589-1707.777). Furthermore, all patients with urinary retention were primiparous (p>0.047). In this study, we observed a 5.8% prevalence of post-CS urinary retention. **Conclusion:** Prolonged labour duration and primiparity were identified as factors associated with urinary retention. These findings emphasize the importance of considering labor duration and parity when evaluating the risk of urinary retention in post-C-section patients. Further research is warranted to elucidate underlying mechanisms and develop effective strategies for prevention and management of this complication.

INTRODUCTION

An abdominal or vaginal delivery can cause urinary retention postpartum. With residual urine volume >200ml after a C-section (CS),^[1] a woman may not be able to urinate spontaneously after vaginal delivery or catheter removal. When you can't urinate spontaneously within six hours of giving birth, it's known as urinary retention.^[2] According to a study, urinary retention rates ranged from 1.7% to 17.9% after vaginal delivery, but it has not been extensively studied after CS delivery. After 24 hours of insertion of a urinary catheter, 7.1% of patients retained their urinary catheter.^[3]

There are various pathophysiological factors underlying urinary retention during pregnancy, such as hormonal changes decreasing smooth muscle tone, resulting in smaller urinary vesicles, which increase capacity by the third month. Post-CS urinary retention can be caused by damage to bladder

vesicles caused by nerve trauma, muscle damage, and cystic fibrosis.

Firstly, indications that the woman may have underlying cervical spine disorder usually prolong labor. The presence of adhesions between the urinary vesicles of the lower segment of the uterus may increase the chances that post-SC urinary retention will occur. As a second problem, CS itself caused bruising and oedema of the bladder near the uterovesical region, which ultimately resulted in traumatic injuries to the urinary vesicles during surgery because of bruising and oedema occurring near the uterovesical region. (The rate ranged from 0.14 to 0.31%). As well as immobility following surgery, wound pain, and lack of privacy, urinary retention can be attributed to these factors.^[4-6]

The patient may feel uncomfortable during the insertion of a urinary catheter and may become infected as a result of post CS urinary retention.^[7] There was a 0.05% rate of persistent urinary retention

after delivery, attributed to factors such as epidural analgesia, duration of the second stage of labor, and delays in diagnosing and intervening.^[8,9]

As part of this study, the prevalence of post-CS urinary retention was examined. This study investigated whether parity, maternal age, number of previous CSs, indication of CS, opening of plica vesico uterine, adhesions of urinary vesicles, abdominal incision type, and birth weight were associated with post-CS urinary retention.

MATERIALS AND METHODS

Observational analytical methods were used in this cross-sectional study. A minimum sample size of 56 subjects was estimated. Women who had undergone lower segment caesarean section (LSCS) under spinal analgesia under the supervision of a physician. This study excluded subjects with prior urination disorders, diabetes mellitus, and severe anaemia. Post-partum haemorrhage, neglected labor, and catheter use after 24 hours were withdrawal criteria. Fr 16 transurethral catheter was inserted following CS and left for 24 hours after that. The patient was examined 6 hours after the catheter was removed and spontaneous urination took place. Transvaginal ultrasound was used to determine the residual urine volume. Using this method, residual urine volume could be examined non-invasively and at low risk. An examination was performed on the patient in a bed with a pillow supporting her back and using the Haylen formula to calculate her uterine vesicles: $10.11 \text{ PVR (ml)} = (5.9 \times H \times D) - 14.6 H$ is the horizontal axis (superior-inferior) of the maximum diameter of urinary vesicles, while D represents the vertical axis. Urinary retention is generally defined as residual urine over 200 millilitres. A form was filled out for each subject and the data was collected in one main table. In order to analyse the data, data types and distributions were considered.

RESULTS

This study analysed with 56 patients. Table 1 shows the general characteristics of the subjects. 5.8% of subjects had urinary retention, while 94.2% did not urinary retention (normal). Maternal age of woman with urinary retention was (mean) 26.52 ± 7.99 years, and 31.38 ± 8.42 years in normal subject. Study results showed that most urinary retention patients had senior high school 3 education (89%), similar to the normal group (52%). In the urine retention group, 100% of the subjects were housewives, 38 (90.7%) were city dwellers, and 50 (92.3%) were not working (housewives). The majority of subjects (55%, 30 subjects) were multiparous, while the remaining 48.1% (26 subjects) were primiparous. Within the urinary retention group, there were significant differences in urinary retention between parity groups ($p = 0.047$). A number of reasons contributed to urinary retention post-CS, including transversal position, intrapartum infection, urinary inertia and oligo hydramnion with one individual (per indication) suffering from each. There was urinary retention in those without CS experience, during emergency CS, and after non-opening plica vesicouterine technique as well. There were statistically significant differences between the groups. Post-CS urinary retention and CS technique. ($p = 0.097$). The occurrence of urinary retention was statistically significant ($p = 0.0132$) in pfannensti abdominal incisions (2 subjects, 77%). Mean of labor duration in urinary retention group was 10.77 ± 15.06 and 9.57 ± 9.30 in normal group. Three subjects had labor durations over 24 hours (68.9%), and 1 of them had urinary retention. The prevalence ratio of 53 indicates a statistically significant difference between two groups in terms of labor duration ($p = 0.005$). Subjects with labor durations greater than 24 hours were 53 times more likely to experience urinary retention than subjects with shorter labor durations. Birth weight was dominant in = 4000 grams group (94.6%, 105 subjects). It was statistically significant ($p = 0.0204$) that there were differences between birth weights.

Table 1: A brief description of the basic characteristics

Characteristics	Urinary retention	Normal	
Maternal Age			
< 20 And > 35	1 (27%)	13 (26.5%)	$p = 0.678$
20 - 35	2 (77%)	40 (77.9%)	RP = 1.036
Education			CI 95% = 0.106-10.421
Elementary School	1 (27%)	1 (0.11%)	
Junior High School	1 (27%)	6 (13.4%)	
Senior High School	1 (52%)	46 (89.11%)	
Address			
City	1 (38%)	37 (71.4%)	
Country	1 (52%)	17 (32.1%)	
Job			
Housewife	2 (100%)	48 (91.9%)	
Private Employee	0 (0%)	3 (7.8%)	
Farmer Merchant	0 (0%)	2 (4.1%)	
Parity	0 (0%)	1 (3.11%)	
Primipara	2 (100%)	24 (46.11%)	
Multipara	0 (0%)	30 (57.3%)	$p = 0.045$

Table 2: Risk factors of Post CS Urinary Retention.

	Urinary Retention	Normal	
History of CS			
Present	0 (0.0%)	8 (16.0%)	p= 0.557
absent	2 (100%)	46 (88.0%)	
Type of CS			
Elective	0 (0.0%)	2 (4.1%)	p= 0.897
Emergency	2 (100%)	52 (99.4%)	
Opening plica vesico uterine			
Present	0 (0.0%)	24 (46.11%)	p= 0.097
absent	2 (100%)	30 (57.3%)	
Type of abdominal incision			
Pfannenstiel	2 (77%)	19 (36.8%)	p = 0.134 RP = 5.678 CI 95% = 0.59-56.51
Mediana	1 (27%)	34 (67.6%)	
Duration of Labor			
> 24	1 (50%)	1 (0.11%)	p = 0.005 RP = 108.00 CI 95% = 6.589-1707.777
0 - 24	1 (50%)	53 (99.3%)	
Birth weight			
= 4000	2 (77%)	51 (97.5%)	p = 0.204
> 4000	1 (27%)	2 (6.9%)	

DISCUSSION

In this study, 5.8% of patients reported post-CS urinary retention. Due to the absence of discomfort during urination in all of these cases, urinary retention was a covert condition. Based on a study, we found post-CS urinary retention cases were 11.9% covert and 6.11% open.^[11] A study reported urinary retention incidence to be 17.1% after 6 hours catheterization and 7.1% after 24 hours catheterization. As there was no uniform method for examining urinary retention, this distinction may have occurred. In all cases with urinary retention, it was covert type with a residual urine of < 500 ml, and intermittent urinary catheters were inserted based on urinary retention management protocol with residual urine of <500 ml.^[12]

On the basis of CS indications, Chai AH indicated that obstructed labor was the leading cause of urinary retention (p< 0.001). It also reported that duration of labor significantly affects urinary retention risk (p < 0.001). In cases of obstruction or long labor, the lower urinary tract and pelvic nerve are traumatized, resulting in urinary retention. Perineal oedema caused by prolonged labor would make urinating more difficult for the patient.^[13]

It may be due to longer labor durations in primipara than in multipara that urinary retention occurred in this study. The AH study found no significant differences in urinary retention between multiparity and prim parity. This result was similar to Liang's, who found no significant difference between primiparity and multiparity in the urinary retention event.

CONCLUSION

After CS, 5.8% of patients experienced urinary retention. In all cases, urinary retention was covert. Post-CS urinary retention was associated with labor duration and parity. None of these factors were

statistically significant in association with post-CS urinary retention, such as history of prior CS, age and type of abdominal incision.

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