

Research Article

The prevalence of lower urinary tract symptoms in Caesarean section patients' first and seventh day of postpartum

Perbandingan Prevalensi Gejala Saluran Kemih Bawah pada Ibu Postpartum Hari pertama dan Hari Ketujuh secara Sectio Caesarea

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Abstract

Objective: To compare the prevalence of Lower Urinary Tract Symptoms (LUTS) on the first day and the seventh day postpartum in Caesarian section patient

Method: This cross-sectional study utilized the ICIQ-FLUTS LF (ICIQ-Female Lower Urinary Tract Symptoms-Long Form) and a questionnaire to screen for risk factors among postpartum patients who underwent C-section delivery at Santo Antonius Hospital, Pontianak, West Kalimantan. Data were collected twice, 12 hours after urinary catheter removal and on the seventh day of the postpartum period. The study sample consisted of 95 respondents.

Results: Among the 111 total respondents, the majority were under 35 years old, multiparous, classified as obese, had no family history of Lower Urinary Tract Symptoms (LUTS), and had not used diuretics or traditional medicine. Significant differences were observed in the prevalence of LUTS between the first and seventh days of the postpartum period. Most symptoms showed a decrease on the seventh day, except for six symptoms: insensible urinary incontinence, hesitancy, urinary retention, feeling of incomplete emptying, bladder pain, and dysuria, which increased.

Conclusion: In conclusion, our study suggests that the duration of the postpartum period affects the prevalence of LUTS following C-section delivery. However, it's important to acknowledge the limitations of this study, which may impact the understanding of LUTS progression during the postpartum period.

Conclusion: In conclusion, we concluded that the duration of the postpartum period affects the LUTS after delivery with the method of C-section, but this study has many limitations which may affect the progressivity of LUTS in the Postpartum period.

Keywords: Caesarean Section, ICIQ FLUTS Long Form, Lower Urinary Tract Symptoms, Postpartum period.

Abstrak

Tujuan: Untuk membandingkan prevalensi Gejala Saluran Kemih Bawah di hari pertama dan hari ketujuh postpartum pada pasien Sectio Caesarea.

Metode: Desain penelitian berupa studi potong lintang dengan pengumpulan data menggunakan kuesioner terstruktur ICIQ FLUTS-LF dan kuesioner skrining dasar penelitian yang dilakukan 2 kali yaitu 12 jam setelah pelepasan kateter dan postpartum hari ke 7. Subjek penelitian ini adalah semua ibu postpartum dengan metode SC yang memenuhi kriteria inklusi dan eksklusi penelitian di RS Santo Antonius Pontianak, Kalimantan Barat. Jumlah sampel pada penelitian ini adalah 95 responden

Hasil: Pada penelitian ini didapatkan subjek sebesar 111 responden yang mayoritasnya berusia kurang dari sama dengan 35 tahun, multipara, status gizinya obesitas, tidak memiliki riwayat keluarga yang mengalami LUTS, tidak mengkonsumsi obat-obatan tradisional dan obat-obatan diuretik. Terdapat perbedaan signifikan di prevalensi LUTS hari 1 dan 7 postpartum SC dengan mayoritas dari 16 gejala LUTS yang didata mengalami penurunan di hari ketujuh dibanding hari pertama, terkecuali 6 gejala LUTS yang mengalami peningkatan di hari ketujuh yaitu Insensible Urinary Incontinence, Hesitansi, retensio urin, perasaan tidak lampias setelah berkemih, nyeri kandung kemih, serta disuria.

Kesimpulan: Dalam penelitian ini, peneliti menyimpulkan bahwa durasi masa postpartum berpengaruh pada keluhan LUTS yang dialami pasca persalinan secara Sectio Caesarea, akan tetapi, penelitian ini memiliki keterbatasan yang dimana terdapat banyak oleh faktor-faktor risiko tertentu yang dapat berpengaruh terhadap progresivitas LUTS

Kata kunci: Sectio Caesarea, ICIQ FLUTS Long Form, Gejala Saluran Kemih Bawah, Masa Pasca Persalinan, Masa nifas, Postpartum.

INTRODUCTION

The postpartum period represents the body's functional recovery to its pre-pregnancy state and typically extends for 6-8 weeks following delivery. During pregnancy, various changes occur in the mother's body, encompassing alterations in anatomy, physiology, and hormonal levels, including changes in the urinary tract^{1,2}. Lower Urinary Tract Symptoms (LUTS) do not constitute a diagnosis but rather reflect a subjective sensation that may indicate alterations or disorders in lower urinary tract function. LUTS can be categorized based on urinary phases, including storage symptoms, voiding symptoms, and post-micturition symptoms³.

Previous studies have examined the relationship between the prevalence of Lower Urinary Tract Symptoms (LUTS) during pregnancy and the six weeks following childbirth, revealing a decrease in LUTS prevalence during the six-week postpartum period compared to the prevalence during pregnancy⁴.

A study was conducted with primipara subjects to investigate the relationship between labor methods and the incidence of Lower Urinary Tract Symptoms (LUTS). This investigation involved the observation of participants for 45 days during the final trimester of pregnancy and continued for ten days postpartum. The study revealed a decrease in symptoms such as frequency, urgency, nocturia, and urge urinary incontinence during the postpartum period. However, it also noted an increase in cases of LUTS attributed to urinary loss among subjects who underwent vaginal delivery, which may be associated with persistent stress⁵.

Research on the impact of the C-section delivery method on the function of the lower urinary tract in the postpartum period is still rare in Indonesia. In C-section deliveries, various factors, including the anesthesia method employed and the use of catheters during surgery, can contribute to the development of Lower Urinary Tract Symptoms (LUTS). This research aims to provide an overview of LUTS and assess the impact of the C-section delivery method on LUTS during the postpartum period. It does so by comparing the prevalence of LUTS on the first and seventh days postpartum.

METHODS

This research is an analytical descriptive study with a cross-sectional study approach. Research

data collection was conducted from January - March 2022. The target population of this study is all postpartum patients with the C-Section delivery method at the Saint Antonius Hospital in Pontianak. The sample size in this study was 111 respondents, whereas sampling was carried out with the simple random sampling method.

This study aims to compare Lower Urinary Tract Symptoms (LUTS) on the first and seventh days postpartum in cases involving the Caesarean Section delivery method. The variables under investigation in this study are independent variables, specifically the prevalence of LUTS on the first day and LUTS on the seventh day postpartum. Data collection commenced with an explanation of the research to the subjects, followed by the completion of informed consent forms. Additionally, sociodemographic data about the subjects and LUTS were collected 12 hours after the removal of the catheter. The data was obtained through the administration of the ICIQ-Female Lower Urinary Tract Symptoms Long Form (ICIQ-Fluts LF) questionnaire, either via Google Forms or through interviews for those unable to complete the Google Form. Subsequently, a similar data collection process was repeated on the seventh day postpartum during the follow-up visit. The collected data was then subjected to descriptive analysis, and the prevalence of LUTS on the first and seventh day postpartum was compared using the Wilcoxon non-parametric test.

RESULTS

Table 1 shows the sociodemographic description of the research subject. Patients included in the aging ≤ 35 years were 93 people (83.8%), and as many as 18 were in the age category of > 35 years. Forty-eight people (43.2%) were included in the primipara category and 63 people (56.8%) were categorized as multipara. Subjects with normal BMI (Body Mass Index) were 53 people (47.7%), while people with BMI that were categorized as overweight were 58 people (52.3%). One hundred eight subjects (97,3%) do not have a family history of previous LUTS, and a small portion of subjects (2,7%) had a family history of LUTS. One hundred six respondents (95.5%) did not consume herbal or traditional medicines and 5 respondents (4,5%) had consumed herbal or traditional medicines. The subjects who did not consume diuretic drugs were 110 respondents (99.1%), while the subjects

who took diuretic drugs were 1 person (0.9%).

Table 1. Sociodemographic Characteristic of Subject

Sociodemographic characteristic of subject	n	%
Age (y o)		
≤ 35	93	83.8
> 35	18	16.2
Parity		
Primipara	48	43.2
Multipara	63	56.8
Body Mass Index		
Normal	53	47.7
Overweight	58	52.3
Family History of LUTS		
Yes	3	2.7
No	108	97.3
History of consuming traditional or herbal medicine		
Yes	5	4.5
No	106	95.5
History of consuming diuretic medicine		
Yes	1	0.9
No	110	99.1

LUTS observed in this study amounted to 16 symptoms grouped based on the phases of urination, including the storage symptoms, voiding symptoms, post-micturition symptoms, and other symptoms. LUTS assessment of the respondents used the ICIQ-Fluts LF questionnaire. The respondents who answered 0 on the questionnaire question were categorized as non-LUTS patients and respondents who answered on a scale of 1 or higher were considered positive LUTS patients. Table 2 compares the prevalence of LUTS on the first and seventh day of the postpartum in the C-section delivery method. Ten symptoms of LUTS decreased on the seventh day of postpartum. However, six symptoms, including Insensible Urinary Incontinence, Hesitancy, Urinary Retention, Feeling of incomplete emptying, bladder pain, and dysuria increased on the seventh day of postpartum.

Table 2. LUTS Prevalence on the First and Seventh Day of Postpartum

LUTS	First day	%	Seventh day	%
Storage symptoms				
Frequency	55	49.1	43	38.4
Nocturia	77	68.8	57	50.9
Urgency	30	26.8	21	18.8
Urge UI	9	8.0	4	3.6
Stress UI	9	8.0	6	5.4
Inesible UI	3	2.7	4	3.6
Voiding symptoms				
Hesitancy	13	11.6	36	32.1
Straining	14	12.5	6	5.4
Intermittent stream	9	8.0	4	3.6
Nocturnal enuresis	11	9.8	1	0.9
Slow stream	8	7.1	2	1.8
Urinary retention	2	1.8	14	12.5
Ability to stop urine flow	33	29.5	12	10.7
Post-micturition symptoms				
Feeling of incomplete emptying	22	19.6	56	50.0
Other symptoms				
Bladder pain	31	27.7	73	65.2
Dysuria	11	9.8	44	39.3

Table 3 shows the significance of the difference in the prevalence of LUTS in the postpartum period. Based on the Wilcoxon test analysis, all symptoms have a p-value value lower than 0.05, which indicates the significant difference in the

prevalence of LUTS on the first and seventh day of the postpartum period in C-section delivery method patients.

Table 3. Comparison of LUTS on the First and the Seventh Day of Postpartum

LUTS	First day	%	Seventh day	%	P-value*
Storage symptoms					
Frequency	55	49.1	43	38.4	0.024
Nocturia	77	68.8	57	50.9	0.044
Urgency	30	26.8	21	18.8	0.000
Urge UI	9	8.0	4	3.6	0.000
Stress UI	9	8.0	6	5.4	0.000
Inesible UI	3	2.7	4	3.6	0.000
Voiding symptoms					
Hesitancy	13	11.6	36	32.1	0.000
Straining	14	12.5	6	5.4	0.000
Intermittent stream	9	8.0	4	3.6	0.000
Nocturnal enuresis	11	9.8	1	0.9	0.000
Slow stream	8	7.1	2	1.8	0.000
Urinary retention	2	1.8	14	12.5	0.000
Ability to stop urine flow	33	29.5	12	10.7	0.000
Post-micturition symptoms					
Feeling of incomplete emptying	22	19.6	56	50.0	0.000
Other symptoms					
Bladder pain	31	27.7	73	65.2	0.040
Dysuria	11	9.8	44	39.3	0.000

* Wilcoxon test

DISCUSSION

This study records the demographic characteristics of subjects considered to be at risk for Lower Urinary Tract Symptoms (LUTS). These risk factors include age, parity, nutritional status, family history of LUTS, and a history of consuming traditional and diuretic medicines. In this study, the majority of respondents were categorized as follows: age group ≤ 35 years (83.8%), multipara (56.8%), overweight (52.3%), had no family history of LUTS (97.3%), had no history of consuming traditional medicines (95.5%), and had not used diuretics (99.1%). Age over 35 years during pregnancy is considered a risk factor, as the risk of postpartum LUTS tends to increase with age⁶. This finding aligns with another study that demonstrates a connection between age and an increased risk of both microscopic and macroscopic trauma⁷.

The majority of subjects in this study fall into the multipara category. Previous studies have highlighted the number of parity as an independent risk factor for the occurrence of Lower Urinary Tract Symptoms (LUTS) in postpartum subjects, irrespective of the delivery method used, be it vaginal or C-section⁸. In a separate study, it was observed that primipara subjects, particularly those who underwent vaginal delivery, experienced more voiding symptoms compared to multipara subjects.

This finding is attributed to the assumption that greater pelvic distension occurs in primipara subjects relative to multipara subjects, potentially leading to damage to the N. pudendum and subsequent complaints of LUTS. For subjects who underwent C-section delivery, multipara individuals were found to be at a higher risk of developing LUTS. This increased risk is associated with the accumulation of anatomic stress from the final trimester of pregnancy and previous deliveries⁹.

Most of the subjects of this study are classified as overweight. Obesity is considered to act as the risk of postpartum LUTS in both vaginal delivery and SC. However, the latest studies found that BMI does not significantly relate to the incidence of LUTS in the postpartum period. In addition, another similar study found that the relationship between obesity and the incidence of LUTS in the postpartum period of the patients who undergoes C-section delivery method is not significantly related, even when risk factors such as age, nulliparity, perineal trauma, and the weight of the baby are controlled to minimize bias^{4,6}.

The data collection for this research was conducted on two occasions: first, 12 hours after the removal of the catheter on the first day postpartum, and second, during a follow-up visit on the seventh day postpartum. The choice of these time points was based on the assumption

that during the postpartum observation period in hospitals, discomfort such as Lower Urinary Tract Symptoms (LUTS) can be effectively monitored and managed. In contrast, on the seventh day, when patients are often at home and not under the continuous care of healthcare workers as in the hospital, it allows us to observe changes in LUTS prevalence.

This study identified differences in LUTS prevalence data between the two time points. Specifically, ten LUTS complaints decreased on the seventh day compared to the first day postpartum, while six complaints of LUTS increased. The increased complaints included bladder pain, insensible urinary incontinence (UI), hesitancy, urinary retention, dysuria, and the feeling of incomplete emptying.

A study involving 489 postpartum subjects that underwent the C-section method in China showed that LUTS was one of the most common complaints in the postpartum period. This study also showed symptoms that occurred are related to the C-section method of delivery ($P < 0.001$), surgery time of more than 60 minutes ($p = 0.006$), or the use of postoperative analgesia ($p = 0.001$). LUTS recorded in the research may be caused by the hypotonic state of the vesica due to the decrease in intravesical pressure or decreased sensitivity of the distal part of the vesica⁶.

Other studies also show C-section delivery method becomes one of the independent risk factors for the occurrence of LUTS in postpartum (ODD Ratio (OR) = 2.21; 95%CI = 1.10 - 4.41). Symptoms that were assessed and explained in these studies are frequency, urgency, nocturia, dysuria, urinary incontinence, voiding disorder, and straining. However, these study considers those symptoms to be physiological, and in most cases, improvements are reported as the postpartum period went by⁴.

Another study provides a different perspective on the relationship between labor methods and the experience of Lower Urinary Tract Symptoms (LUTS). This study underscores the various types of damage that can occur in the urinary tract as a result of labor. The study found that both vaginal and C-section delivery methods carry a risk of complaints related to the urinary tract. Vaginal delivery is associated with long-term side effects on the urinary tract, whereas the C-section method of delivery is linked to fewer side effects. This difference may arise because urinary tract injuries during C-section procedures can be readily identified and addressed during

the surgery¹⁰.

Table 3 shows that the prevalence of LUTS on the first and seventh day was significantly different. Most complaints decreased on the seventh day. This result is in line with previous research which shows that LUTS is one of the changes in the pregnancy period and is caused by the pressure of the urinary tract organs as the uterus enlarges. The majority of subjects with symptoms of LUTS in the study reported improvements in the postpartum period¹¹.

Although the majority of symptoms decreased on the seventh day, several cases increased on the seventh day. These cases can be influenced by several factors such as patient subjectivity, comorbidity factors, history of surgery, and anatomical disorder of the urinary tract experienced by the subject^{4,11-14}. The history of previous vaginal delivery methods, young maternal age, and a history of gestational diabetes can also influence the progressivity of LUTS¹³. Therefore, it is essential to control these risk factors to rule out the possibility of research bias.

A specific study explains that the symptoms of LUTS experienced during the postpartum period start during pregnancy, especially from the final trimester. These complaints will then continue during the postpartum period with varying duration¹⁴. Previous studies also found similar findings where urinary vesica capacity increased during the gestational age of 12 weeks and progressed through 6-8 weeks postpartum. This capacity increase in vesica may cause complaints of urinary retention several days postpartum⁷.

While the C-section delivery method is identified as an independent risk factor contributing to Lower Urinary Tract Symptoms (LUTS) in the postpartum period, it is also considered a protective factor against the persistence of LUTS during this period. The C-section delivery method results in minimal stress on the urinary tract in comparison to the vaginal method. In contrast, the vaginal delivery method, where babies pass through the birth canal, can stretch the pelvic floor muscles, thereby increasing the risk of LUTS due to injuries caused by this strain^{6,7,9,11}. However, it is important to consider indications for C-section surgery, such as prolonged labor, macrosomia, and cephalopelvic disproportion, as they may affect the emergence of LUTS in the postpartum period. Therefore, it is crucial to take these factors into account when assessing the improvement of LUTS in the postpartum period

in subjects who undergo labor with the C-section method.

RESEARCH LIMITATIONS

Researchers did not control risk factors that might affect the severity of LUTS, and this may cause bias in the process of research. The number of research samples may not have been able to represent the LUTS population as a whole and has not been able to get rid of the subjective factors that may appear in this study. In this study, the researchers does not investigate between the LUTS prevalence and existing risk factors.

CONCLUSION

Based on the results obtained from this study, there is a significant difference in LUTS numbers on the first and seventh day of the postpartum period in which the majority of LUTS complaints in the postpartum SC method had decreased on the seventh day, except for six complaints that increased on the seventh day. This study found that the duration of the postpartum period affects the LUTS complaints experienced by postpartum in C-section patients.

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