

Research Article

Risk Factors for Stress Urinary Incontinence Following Vaginal and Caesarean Delivery

Faktor-Faktor Risiko Stres Inkontinensia Urin setelah Persalinan Pervaginam dan Perabdominam

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Abstract

Objective: To determine the factors that affect the incidence of postpartum stress urinary incontinence.

Methods: Women experienced with stress urinary incontinence 3 months after birth vaginally or section caesarean were enrolled in the present cross-sectional study. The strength of the pelvic floor muscle measured with perineometer. All of the women were assessed for SUI using Sandvix Severity Index (SSI) dan The three incontinence question (3IQ) questionnaire.

Results: Eighty-four women with stress urinary incontinence (SUI) after vaginal delivery or caesarean section enrolled in the study. There was a significant difference between mode of delivery and SUI following delivery ($p < 0.05$). Perineal tear (grade 1-2), BMI, newborn weight and circumference significantly affect the SUI after vaginal or caesarean section. Perineal tear increase SUI after delivery 7-fold compared to other factors (OR=7.367; 95% CI=1.815-29.904).

Conclusions: SUI after delivery affected by mode of delivery, pelvic muscle floor weakness, perineal tear, BMI, newborn weight and head circumference.

Keywords: mode of delivery, stress urinary incontinence

Abstrak

Tujuan: Untuk mengetahui faktor-faktor yang mempengaruhi terjadinya stress inkontinensia urin post partum.

Metode: Perempuan yang mengalami stres inkontinensia urin 3 bulan postpartum normal atau seksio dilibatkan dalam penelitian potong lintang ini. Kekuatan otot dasar panggul diukur dengan perineometer. Penilaian SUI dilakukan dengan menggunakan kuesioner Sandvix Severity Index (SSI) dan three incontinence question (3IQ).

Hasil: Delapan puluh empat perempuan dengan SIU postpartum per vaginam atau operasi sesar dilibatkan dalam penelitian ini. Terdapat perbedaan signifikan antara cara persalinan dan SIU setelah postpartum ($p < 0,05$). Ruptur perineum (grade 1-2), IMT, berat bayi lahir dan lingkar kepala secara signifikan mempengaruhi SIU postpartum. Ruptur perineum meningkatkan SIU postpartum 7 kali lipat dibandingkan dengan faktor-faktor lainnya (OR = 7,367; 95% CI = 1,815-29,904).

Kesimpulan: SIU postpartum dipengaruhi oleh cara persalinan, kelemahan dasar otot panggul, robekan perineum, IMT, berat bayi lahir dan lingkar kepala.

Kata kunci: metode persalinan, stres inkontinensia urin

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INTRODUCTION

Pelvic floor disorders in women result in loss of pelvic floor muscle strength (PFMS) that leads to genital prolapse, constipation, faecal and urinary incontinence. The incidence of urinary incontinence in post-partum women approximately 34%. Pregnancy, vaginal delivery, parity, duration of the second stage labor, difficulties in fetal extraction at the time of

c-sectiosarean, fetal weight, perineal trauma, mode of delivery, endocrine and nerve disorders are the major cause in decreased or loss of pelvic floor muscle tone that can lead to disruption of genitourinaria.¹

Stress urinary incontinence (SUI) is defined as the involuntary loss of urine on effort or physical exertion, or on sneezing or coughing¹ results from either hypermobility of the vesicourethral

segment due to weakness of the pelvic floor support or from intrinsic sphincter deficiency (ISD).²This disorder is related to quality of life and daily activities, because patients feel less confident, depressed, embarrassed and anxious.³

Urinary incontinence usually occurs 32-85% symptomatically in pregnant women and the incidence increases in the third trimester. Urinary incontinence during pregnancy is described as a self-limiting disease. Most cases of urinary incontinence occur in the first birth. Previous study by Baydock et al., on 632 patients after 4 months of delivery found 23% had urinary incontinence stress, 12% urinary incontinence and 29% mixed incontinence and only 4% alvi incontinence. This incidence was elevated in patients whose delivery was assisted by forceps. Urinary incontinence was higher in women who delivered vaginal compared cesarean section, and evaluated three months of postpartum. The evaluation show cesarean section had lower prevalence of persistent urinary incontinence (Baydock).⁴Age obesity, diabetes, pelvic floor surgery, pregnancy and delivery are the risk factors for the development of stress urinary incontinence in women⁵ which a significant percentage of women have persistent symptoms in the postpartum period.

This study aims to determine factors that affect the incidence of stress urinary incontinence after delivery.

METHODS

Women experienced with stress urinary incontinence 3 months after birth vaginally or section caesarean were enrolled in the present cross-sectional study conducted at Dr. Wahidin Sudirohusodo Hospital and several affiliated hospitals in the Department of Obstetrics and Gynecology Faculty of Medicine, Universitas Hasanuddin. The study was approved by the Health Research Ethics Committee of Faculty of Medicine, Universitas Hasanuddin. The strength of the pelvic floor muscle measured with perineometer (PFX09122, Cardio design Pth. Ltd, Baulkham Hills, Australia). All of women were assessed for SUI using Sandvix Severity Index (SSI) and the three incontinence question (3IQ) questionnaire. A person chi-square test was used to analysis with p-value of less than 0.05 was taken to be statistically significant.

RESULTS

During the study period, we enrolled 84 women with stress urinary incontinence (SUI) after vaginal delivery or caesarean section (table 1). There was significant difference between mode of delivery and SUI following delivery ($p < 0.05$). Table 2 show perineal tear (grade 1-2), BMI, newborn weight and circumference are significantly affect the SUI after vaginal or caesarean section. Perineal tear increase SUI after delivery 7-fold compared to other factors (OR=7.367; 95% CI=1.815-29.904).

Table 1. Stress Urinary Incontinence (SUI) and Mode of Delivery

Mode of delivery	SUI postpartum				Total		p value	OR (CI 95%)
	Yes		No					
	n	%	n	%	n	%		
Vaginal and vacuum extraction	18	21.4	44	52.4	62	100	0.033	6.000
C-sectio cesarean	1	1.2	21	25.0	22	100		

Table 2. Factors that Affect SUI Postpartum

Factors	SUI postpartum				Total		p value	OR (CI 95%)
	Yes		No					
	n	%	n	%	n	%		
Perineal tear (grade 1-2)								
Yes	17	20.2	28	33.4	45	53.6	0.000	7.367 (1.815-29.904)
No	2	2.4	37	44.0	39	46.4		
Body mass index (kg/m²)								
18.5-25	9	10.7	47	56.0	56	66.7	0.043	2.222 (1.021-4.838)
≥ 25	10	11.9	18	21.4	28	33.3		
Newborn weight (gr)								
2500-3999	12	14.3	63	75.0	75	89.3	0.000	4.861 (2.601-9.083)

≥ 4000	7	8.3	2	2.4	9	10.7		
Head circumference (cm)								
29 -33	4	4.8	35	41.7	39	41.7	0.012	3.250 (1.176-8.978)
≥ 34	15	17.9	30	35.7	45	35.7		

DISCUSSION

The present study found there was a correlation between SUI postpartum and mode of delivery, pelvic muscle floor weakness, perineal tear, BMI, newborn weight and head circumference. Previous study suggested that the risk of pelvic floor disorders such as SUI was independently associated with vaginal delivery whereas cesarean delivery has a protective effect compared to vaginal delivery.⁶⁻⁸ Vaginal delivery may be responsible for pelvic floor disorders by damaging pelvic support tissues such as muscles and connective tissues and also nervous structures, particularly at the second stage of labor.⁹ Partial denervation in the pelvic floor may occur particularly in the first pregnancy, and the risk of pelvic floor disorders increases with the severity of the damage in most women with vaginal delivery¹⁰ that is shown more prominent in nulliparous continent women.¹¹ However, there is not enough evidence-based data confirming that vaginal delivery is the only factor responsible for pelvic floor disorders.⁹

Our study also showed that SUI associated with reduced postpartum pelvic floor muscle strength. After delivery, the SUI partly due to a decrease in the function of the levator ani muscles as an important supporting component of the pelvic floor. The levator ani muscle is a complex muscle that against the constant encouragement to the bottom of the various organs of the abdomen and pelvis but their severity vary. Another factor that might be the cause of the SUI is neural inervation disorder of the pudendal nerve damage due to the occurrence or pudendal neuropathy results in a decrease in tone and atrophy levator ani muscles. Finally, a decrease in muscle tone of the levator hiatus widening will occur urogenital and declines in the levator ani of the original horizontal position, thereby directing the levator ani muscle burden to other pelvic floor backers such as connective tissue and ligaments as a secondary backstop network. As a result of continuous intra-abdominal pressure is constant, a patron of the connective tissue as an advocate for secondary endopelvic weakened, resulting in pelvic organ prolapse many years after the neuromuscular damage.¹²

Body Mass Index (BMI) is another factor related to SUI in this study. Previous study showed that women aged 45-50 years old with excess body weight (BMI ≥30 kg/m²) have a higher risk for incontinence urinary than women with BMI <20kg/m².¹³ The presence of overweight will provide a greater burden so as to increase intraabdominal pressure and increase pressure on the bladder and pelvic floor muscles.¹⁴

post partum samples with a smaller range of head circumference 50-90 percentile (35-37 cm; OR 1.3).¹⁵ The pelvic floor muscles injury might have as a result of the fetal entry at the base of the pelvis longer in the pelvic floor which the greater the injury that can occur and increase the perineal tear. Perineal tear also contributes significantly to the SUI after delivery in the present study. This study has also limitations. Perineal massage was not performed before episiotomy or perineal tear during labor. Another limitation is the duration of stage II and the intervention during labor are not measured.

CONCLUSION

Mode of delivery, pelvic muscle floor weakness, perineal tear, BMI, newborn weight and head circumference contribute to postpartum stress urinary incontinence.

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