



## Postpartum urinary stress incontinence - its relation with the mode of delivery

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**OBJECTIVE(S)** : To determine the incidence of postpartum stress urinary incontinence (SUI), its correlation with vaginal delivery, forceps delivery and cesarean section, and to assess the incidence of genuine stress incontinence with urodynamics.

**METHOD(S)** : Out of 250 initially selected primiparas 222 responded to the questionnaire for the SUI at 8 weeks postpartum. Urodynamic study was advocated to those, who said that they had SUI. The incidences of SUI after different modes of delivery were compared with each other. Statistical analysis was done by odds ratio and 95% confidence limit estimation and chi square test.

**RESULTS** : The incidence of SUI was 23.42%. SUI was significantly higher after vaginal delivery and more so after forceps delivery in comparison with that after cesarean section. No significant difference was observed between forceps delivery and vaginal delivery. Incidence of genuine stress incontinence was 6.06%.

**CONCLUSION(S)** : Incidence of SUI was lower after cesarean section. Urodynamics show lower incidence of genuine stress incontinence than that revealed by women's perception.

**Key words** : postpartum stress urinary incontinence, mode of delivery, urodynamics

### Introduction

Urinary incontinence is a physically debilitating as well as socially incapacitating condition which leads to anxiety, depression and loss of self confidence. Urinary incontinence and overactive bladder are the most common types of lower urinary tract dysfunction, occurring in about one-third of adult women<sup>1</sup>. Stress incontinence after child birth is one of the common but often overlooked causes of maternal morbidity.

The present study was conducted to determine the incidence of postpartum stress urinary incontinence (SUI) as well as to ascertain the incidence of stress incontinence after vaginal delivery, forceps delivery and cesarean delivery. Whether the perineal injuries affect the occurrence of postpartum

stress incontinence or not was another aspect of our study. The study was designed to find out the incidence of genuine stress incontinence with the help of urodynamics. The attitude of women to the distressing complaint of postpartum stress incontinence was also evaluated.

### Methods

The study was carried out from June 2004 to December 2004 after taking due approval from the local ethical committee. Two hundred and fifty consecutive primiparas attending our postpartum clinic 8 weeks after delivery and fulfilling the inclusion criteria were selected for the study. Only those who had a singleton pregnancy with vertex presentation were selected. Women, who had suffered from any urinary tract infection or other medical diseases during pregnancy and puerperium, and those who had undergone induction of labor were excluded. Women who had urinary stress incontinence before pregnancy were also excluded. The mode of delivery (eg. normal delivery with mediolateral episiotomy, forceps delivery, or cesarean section) was noted from the records. In case of vaginal deliveries the occurrence of perineal injuries and in cesarean sections the indications and timings –

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elective or emergency – were recorded. With the help of a questionnaire all women were asked about the involuntary leakage of urine during sneezing, coughing, laughing or while lifting heavy weights. Two hundred and twenty-two women responded to the questionnaire and were selected for further study. Their average age was  $22 \pm 2.5$  years. The 52 women who answered positively for SUI were subjected to urodynamic studies for objective assessment of SUI. In urodynamic study, two No. 6 infant feeding tubes were introduced into the urethra and one of them was attached to a transducer. Another transducer was attached to an infant feeding tube No. 8 and was introduced in the rectum. The bladder was filled with about 500 mL of normal saline at the rate of 50-75 mL/minute. During the filling phase, women were asked to cough and to change the position from sitting to standing and the urinary leakage if any was noted. Thus, the leak-point pressure was noted to establish the incidence of genuine stress incontinence. Statistical analysis was done by crude analysis, subgroup analysis, estimation of odds ratio (OR) with 95% confidence interval (CI) and chi square test.

## Results

SUI was reported by 52 of the 222 women (23.42%). The study population was divided into three groups according to the mode of their delivery. Eighty-four women had cesarean section, 107 had normal vaginal delivery, and 31 had forceps delivery. The incidence of SUI as observed by the women was 14.3% (12/84) in the cesarean section group, 27.1% (29/107) in the normal vaginal delivery group and 35.5% (11/31) in the forceps delivery group (Table 1). The incidence of SUI after cesarean delivery was significantly lower than that after normal vaginal delivery (OR 2.23, 95% CI 1.03-5.03;  $\chi^2$  4.56,  $P=0.032$ ) and also significantly lower than that after forceps delivery (OR 3.30, 95% CI-1.15-9.56;  $\chi^2$  6.03,  $P=0.012$ ). The difference in the incidences of SUI after normal vaginal delivery and after forceps delivery was not statistically significant (OR 1.48, 95% CI 0.58-3.74;  $\chi^2$  0.81,  $P=0.36$ ).

**Table 1. Relation of SUI with mode of delivery.**

Mode of delivery	Women studied (n=122)	Women with SUI (n=52)	Percentage of women with SUI
Cesarean section	84	12	14.3 <sup>a</sup>
Normal vaginal delivery	107	29	27.1 <sup>b</sup>
Forceps delivery	31	11	35.5 <sup>c</sup>

SUI – Stress urinary incontinence

a vs b –  $P=0.032$

a vs c –  $P=0.012$

b vs c –  $P=0.36$

Out of the 26 women who had elective cesarean section before the onset of labor only one woman complained of postpartum SUI (3.84%) compared to 11 out of 58 women (18.96%) after emergency cesarean section done after the onset of labor. Statistical significance cannot be obtained due to the fact that only one woman complained of SUI after elective cesarean section. We generally do episiotomy for all primigravidas. In our study, only two women had normal vaginal delivery without episiotomy or perineal injury and they did not complain of SUI. Thirty-five women out of 136 (25.73%) who had episiotomy without extension or vaginal laceration complained of SUI compared to 5 out of 19 (26.31%) who had perineal tear and/or vaginal lacerations. This difference was not statistically significant (OR 1.03, 95% CI 0.30-3.37;  $\chi^2$  0.0,  $P=0.95$ ).

All women, who reported SUI in response to the questionnaire were asked to have the urodynamic evaluation. But only 33 women (26 who had normal vaginal delivery with episiotomy, three who had forceps delivery and four who had emergency cesarean section) out of 52, agreed to have the urodynamic study. Only two women were found to have genuine SUI by the urodynamic study and both of them were from the normal vaginal delivery group. The overall incidence of genuine SUI in those complaining of SUI was 6.06% (2/33).

## Discussion

In our study the overall incidence of SUI at 8 weeks postpartum was 23.42%, whereas Mason et al <sup>2</sup> reported it to be 31%. Another study reveals 22% occurrence of symptoms of postpartum SUI after one year <sup>3</sup>. We found that the incidence of SUI after normal vaginal delivery was 27.1%, after forceps delivery 35.5% and after cesarean section 14.3%. The incidence of SUI was significantly higher ( $P=0.032$ ) after vaginal delivery and more so after forceps delivery ( $P=0.012$ ) in comparison to that after cesarean delivery. Meyer et al <sup>4</sup> reported 21% incidence of SUI 9 weeks after vaginal delivery and 34% after forceps delivery whereas another study <sup>5</sup> reported 21% and 32 % incidence respectively at nine weeks postpartum. Groutz et al <sup>6</sup> noted a much lower prevalence of SUI one year postpartum after vaginal delivery (10.3%) and after cesarean section done for obstructed labor (12%). The EPICONT study revealed that the age-standardized prevalence of incontinence was 15.9% after cesarean section and 21% after vaginal delivery <sup>7</sup>. Other studies also confirm a significantly reduced incidence of SUI after cesarean section <sup>2,8</sup>. The present study did not find any significant difference between SUI after normal vaginal delivery and after forceps delivery which

corresponds to the findings of few other studies <sup>2,5</sup>. Arya et al <sup>9</sup> noted the same incidence of SUI after forceps delivery and after vaginal delivery at 2 weeks postpartum but forceps delivery had resulted in a more persistent SUI at one year. Our study shows 3.84% incidence of SUI after elective cesarean section similar to 3.4% reported by Groutz et al <sup>6</sup> at one year postpartum. In our study there was no significant difference in the incidences of SUI after episiotomy and after episiotomy with perineal tear or vaginal lacerations. This is more or less supported by other studies <sup>9,10</sup>. Our urodynamic study revealed a very low 6.06% incidence of genuine SUI in those who complained of SUI. Other studies also commented about the discrepancy between the history of SUI and urodynamic findings <sup>1,11</sup>. Chalia et al <sup>12</sup> found 5% incidence of genuine SUI in the postpartum period. Our urodynamics revealed no case of genuine SUI after forceps delivery and after cesarean section but due to small number of women in these groups, no statistical conclusion can be drawn. Other studies revealed no significant difference in the incidence of genuine SUI in either of these two groups in comparison to vaginal delivery group <sup>12,13</sup>. Another study noted abnormal urodynamic findings in both cesarean section and vaginal delivery groups. Lastly, the response rate to the questionnaire in our study was 88.8%, almost similar to that in other studies.

### Conclusion

Cesarean section has a significantly lower incidence of SUI whereas comparison between forceps and vaginal delivery does not show any significant difference in the incidences. Urodynamic study shows that the incidence of genuine SUI is very low.

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