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ORIGINAL ARTICLE

Association of Urinary Incontinence with Instrumental Vaginal Delivery in Females Presenting at Term in Labor

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ABSTRACT

Objectives: To find the association of urinary incontinence with instrumental vaginal delivery among women presenting at term in labor at a tertiary care hospital.

Material and methods: Between August 2020 to February 2021 total 180 (90 patients in un-exposed, 90 patients in exposed group) pregnant women delivering at term with either instrumental vaginal delivery or spontaneous vaginal delivery having age 20-40 years, gestation age 37-41 weeks were selected from Obstetrics and Gynecology Department, Sir Ganga Ram Hospital, Lahore. Association of urinary incontinence with instrumental vaginal delivery among women presenting at term in labor were studied.

Results: Mean age of patients was 30.17 ± 5.87 years with age range 20-40 years. In un-exposed group, urinary incontinence was develop in 6 (6.67%) patients and in exposed group, urinary incontinence was develop in 21 (23.33%) patients. Difference of urinary incontinence between the both groups was statistically significant (P=0.004. Findings also showed that there is 3.5 times more risk of development of urinary incontinence in exposed group as compared to un-exposed group. (RR = 3.5)

Conclusion: This study concluded that the frequency of urinary incontinence is higher after instrumental vaginal delivery among women presenting at term in labor as compared to spontaneous vaginal delivery.

Keywords: urinary incontinence, instrumental, vaginal delivery.

INTRODUCTION

Involuntary urination on physical exertion like coughing or sneezing is called Urinary inconticience (UI). [1] UI is the most onerous and unpleasant of all urinary symptoms among females, both in terms of the population and in terms of a person.[2] Urinary incontinence has been shown to have a negative effect on women's daily life. With ageing, the incidence of UI symptoms rises. This issue negatively affected the quality of life of females. UI does not cause mortality, but it does cause significant debility, social isolation, psychologic stress, and financial strain Women may experience shame and humiliation while discussing the issue with healthcare practitioners and can suffer from depression.[3]

Medical improvements over the past couple of decades have reduced morbidity related to UI and primary prevention of UI remains highly desired. One potentially controllable risk factor is the mode of delivery. Vaginal delivery has been shown to have a significant impact on pelvic region, reducing support of bladder neck and compromising innervation.[4] AVD (Assisted vaginal delivery) using vacuum or forceps is thought to bring greater risks of trauma, increasing the chance of UI while Cesarean delivery, particularly pre-labor caesarean, is thought to provide significant protection against such pelvic floor damage. An abundance of information suggests that within early months after delivery, rates of UI are greater among vaginal deliveries as compared to C-section.[5,6] A number of risk variables appear to be implicated in postpartum urine incontinence and later in life, with rising evidence for the influence of delivery manner.

Although the prevalence of stress incontinence is higher during pregnancy than after birth, it is widely considered that delivery has a larger chance of causing long-term symptoms than pregnancy.[7-9]

The purpose of our study is to determine the relationship between urine incontinence and assisted vaginal delivery in pregnant women who appear at term in labour, as past research has given inconsistent results.The effect of VD is one of the potential risk factors for UI after delivery and later in life of females. Furthermore strategies could be made to detect cases at risk earlier to decrease the long term morbidity of UI among women.

Operational Definitions

Instrumental vaginal delivery: It is defined as vaginal delivery accomplished with the aid of instruments which can either be vacuum or forceps i.e., application of an instrument to facilitate the birth of a child to treat obstructed second stage of labour and presumed fetal compromise.

Spontaneous vaginal delivery: It was labeled if female had delivered through vagina without any assistance including forceps or vacuum.

Urinary incontinence: It was labeled if female complained loss of urine during physical exertion, cough or sneezing or involuntary urination after one month of delivery.

MATERIALS & METHODS

Between August 2020 to February 2021 total 180 (90 patients in un-exposed, 90 patients in exposed group) pregnant women delivering at term with either instrumental vaginal delivery or spontaneous vaginal delivery having age 20-40 years, gestation age 37-41 weeks were selected from Obstetrics and Gynecology Department, Sir Ganga Ram Hospital, Lahore. Exposed group: instrumental vaginal delivery (as per-operational definition) and un-exposed group: spontaneous vaginal delivery (as per-operational definition)

Pregnant women already suffering from urinary incontinence, multiple pregnancy, patients with previous CS, CPD, gestational hypertension, GDM, fibroid and macrosomia were excluded from the study.

Study was approved by ethical committee of the hospital and written informed consent was taken from every patient.

Demographic information (name, age, address, contact number, baby sex and education) was also noted. Then they were randomized to either group i.e., instrumental or spontaneous vaginal delivery. After 1 month, females were asked for loss of urine during physical exertion, cough or sneezing or involuntary urination, and then urinary incontinence was labeled (as per operational definition). Patients were followed up to discharge and then were contacted after one month telephonically to know if they had shown any symptoms of the urinary incontinence. Responses were noted in the questionnaire.

SPSS version 24 was used to analyzed the data. Age and gestational week were presented as mean and SD. Urinary incontinence was presented as frequency and percentage. Risk Ratio was calculated to measure association of urinary incontinence with two study groups. P-value ≤0.05 was considered as significant.

Effect modifiers including age, parity and BMI were controlled through stratification. Post stratification RR was calculated with p value ≤ 0.05 taken as significant.

RESULTS

Mean age of patients was 30.17 ± 5.87 years with age range 20-40 years. The mean age of women in unexposed group was 30.20 ± 5.73 years and in exposed group was 30.13 ± 5.98 years. The mean gestational age in unexposed group was 38.93 ± 1.04 weeks and in exposed group was 38.53 ± 1.37 weeks.

In un-exposed group, urinary incontinence was develop in 6 (6.67%) patients and in exposed group, urinary incontinence was develop in 21 (23.33%) patients. Difference of urinary incontinence between the both groups was statistically significant (P=0.004). Findings also showed that there is 3.5 times more risk of development of urinary incontinence in exposed group as compared to un-exposed group. (RR = 3.5) (Table 1)

In age group 20-30 years, urinary incontinence was found in 3 un-exposed patients and 12 exposed patients. Difference was statistically significant between the both groups with p value 0.03. Relative risk value was 3.43. In age group 31-40 years, urinary incontinence was develop in 3 un-exposed patients while in 9 exposed patients and the difference was significant (P=0.05). Relative risk value was 3.43. (Table 2)

In 37-39 gestational age group, urinary incontinence was noted in 3 un-exposed patients while 9 exposed patients but the difference was insignificant (P=0.06) and relative risk value was 3.47. In 40-41 weeks gestational age group, urinary incontinence was found in 3 patients and 12 patients respectively in un-exposed group and exposed group but the difference was not significant (P=0.06) and relative risk value was 2.91. (Table 3)

In ≤27 BMI group, total 3 patients of un-exposed group while 12 patients of exposed group found with urinary incontinence. Difference of urinary incontinence between un-exposed group and exposed group was statistically significant with p value 0.00 while relative risk value was 5.33. In >27 BMI group, urinary incontinence was develop in 3 patients of un-exposed group while in 9 patients of exposed group. Difference was not statistically significant with p value 0.22 and relative risk value was 2.33. (Table 4)

Table 1: Comparison of Urinary Incontinence between the both groups

Groups Status	Urinary Incontinence		Total	P Value	Relative Risk
	Yes	No			
Un-exposed	6 (6.67)	84 (93.33)	90	0.004	3.5
Exposed	21 (23.33)	69 (76.67)	90		

Table 2: Association of Urinary Incontinence with group status in relation to age

Groups Status	Urinary Incontinence		P Value	Relative Risk
	Yes	No		
Age group 20-30 years				
Un-exposed	3	39	0.03	3.5
Exposed	12	36		
Age group 31-40 years				
Un-exposed	3	45	0.05	3.43
Exposed	9	33		

Table 3: Association of Urinary Incontinence with group status in relation to gestational age

Groups Status	Urinary Incontinence		P Value	Relative Risk
	Yes	No		
37-39 weeks gestational age group				
Un-exposed	3	63	0.06	3.47
Exposed	9	48		
40-41 weeks gestational age group				
Un-exposed	3	21	0.06	2.91
Exposed	12	21		

In 0-2 parity group, urinary incontinence was found in 3 and 9 patients of un-exposed and exposed group respectively but the difference was insignificant (P=0.13) and relative risk value was 3.00. In 3-4 parity group, urinary incontinence was found in 3 patients of un-exposed group while in 12 patients of exposed group. Difference was insignificant with p value 0.37 and relative risk value 2.00. (Table 5)

Table 4: Association of Urinary Incontinence with group status in relation to BMI

Groups Status	Urinary Incontinence		P Value	Relative Risk
	Yes	No		
BMI ≤27				
Un-exposed	3	45	0.00	5.33
Exposed	12	24		
BMI >27				
Un-exposed	3	39	0.22	2.33
Exposed	9	45		

Table 5: Association of Urinary Incontinence with group status in relation to parity

Groups Status	Urinary Incontinence		P Value	Relative Risk
	Yes	No		
Parity 0-2				
Un-exposed	3	57	0.13	3.00
Exposed	9	51		
Parity 3-4				
Un-exposed	3	27	0.37	2.00
Exposed	12	48		

DISCUSSION

This study was conducted to find the association of urinary incontinence with instrumental vaginal delivery among women presenting at term in labor. In this study, urinary incontinence was found in 06 (6.67%) patients in spontaneous vaginal delivery while in instrumental vaginal delivery, it was seen in 21 (23.33%) patients with p-value of 0.004 and relative risk of 3.50. In 0-2 parity group, urinary incontinence was found in 3 and 9 patients of un-exposed and exposed group respectively but the difference was insignificant (P=0.13) and relative risk value was 3.00. In 3-4 parity group, urinary incontinence was found in 3 patients of un-exposed group while in 12 patients of exposed group. Difference was insignificant with p value 0.37 and relative risk value 2.00.

One study found that the percentage of urinary incontinence was 35-37% in females who had instrumental vaginal delivery and 33% in females underwent spontaneous vaginal delivery. The difference was insignificant (p>0.05) showing no association.[10] One more study found that the percentage of urinary incontinence was 22.2% in females who had instrumental vaginal delivery while 20.6% in females underwent spontaneous vaginal delivery. The difference was insignificant (p>0.05) showing no association.[11] Handa et al[12] reported 2.9 times more risk of SUI and 5.6 times more risk of prolapse after Vaginal delivery compared to C-section without labor.

One study found that the percentage of urinary incontinence was 73.3% in females who had instrumental vaginal delivery while 49.2% in females underwent spontaneous vaginal delivery.[13] In a study by Sokkary and others demonstrated that the proportion of women having urinary incontinence when undergone operative vaginal delivery was significantly higher as compared to the unexposed group [9/66 (13.6%) vs. 1/41 (0.02%), respectively, p=0.04].[14] In study of Handa et al,[15] instrumental vaginal delivery had 4 times more risk of development of urinary incontinence.

Guarisi et al[16], studied 456 pregnant females and found that parity was associated with urinary incontinence. Santos et al[17], studied 336 pregnant females and found that multiparous had 10 times more risk of IUE as compared to primiparous. Scarpa et al[18], found that multiparous ≥ 4 deliveries had 1.41 and 1.29 times more risk of pollakiuria and nocturia as compared to nulliparous

CONCLUSION

This study concluded that the frequency of urinary incontinence is higher after instrumental vaginal delivery among women

presenting at term in labor as compared to spontaneous vaginal delivery.

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