Original Article

Effects of Mode of Delivery and Perineal Injury on the Prevalence of Urinary and Fecal Incontinence

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Abstract

Objective: To determine the frequency of urinary and fecal incontinence and observe the effects of mode of delivery and perineal injury at 6 weeks and 1 year postpartum.

Methodology: This prospective cohort, a multicentric study was carried out at Quaid-e-Azam International Hospital and Al-Sadiq Saad Shaheed Hospital for 1 year from March 2018 to February 2019. One hundred and twenty participants in early and mid pregnancy were recruited at <30 weeks of gestation and were followed at 6 weeks and 12 months postpartum. The effect of delivery mode was determined by division into, vaginal and operative groups. The vaginal delivery group was further studied for the application of instruments and extent of the perineal injury. The severity of symptoms were considered mild, moderate, and severe.

Results: The mean age of females was 24.32±13.96 years. The mean gestational age at presentation was 26.21±7.18 weeks. There were 20 (16.7%) females who had a delivery through lower segment cesarean section, while 82 (68.3%) had spontaneous vaginal delivery, 11 (9.17%) had vacuum delivery and 7(5.8%) cases had a forceps delivery. Episiotomy was performed in 72 (60%) cases, 1st degree perineal tears occurred in 6 (5%) cases, 2nd-degree perineal tears occurred in 04 (3.33%) cases and 3rd degree perineal tears occurred in 2 (1.66%) cases. There was a significant effect of mode of delivery on urinary incontinence, fecal incontinence, and double incontinence after 6 weeks and 12 months of delivery and females who had vaginal delivery showed more incontinence than females underwent cesarean delivery and no females showed urinary incontinence who underwent cesarean delivery ($p<0.05$).

Conclusion: UI and AI are prevalent among women during postpartum period. Are more common after vaginal delivery especially operative vaginal delivery. Perineal injury contributes a lot, to the severity of symptoms.

Key Words: Urinary incontinence, abdominal incontinence, Postpartum, antenatal, vaginal delivery, episiotomy

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Introduction

Urinary incontinence is a storage symptom defined as involuntary loss of urine by the International Continence Society.[1] Feacal incontinence is the inability to control passage of gas, liquid, or solid stools that is a social or hygienic problem. This condition is catastrophic having damaging effects on the quality of life; resulting psychological effects like loss of self esteem can lead to social isolation and depression.[2]

This is quite a common condition as pregnancy and childbirth can potentially injure pelvic floor musculature including levator any, endo-pelvic fascia, pelvic nerves and anal sphincter complex. The associated physiological hormonal changes exacerbated by pressure effects of uterine enlargement due to fetal and placental growth.[3] In addition preexisting connective tissue disease and hereditary factors may also play a role. Decreased urethral resistance due to use of drugs

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like intravaginal prostaglandins may also be contributory.[4,5] In addition to mode of delivery and extent of perineal trauma socio demographics like increased BMI, ethnic origin, childhood enuresis and incontinence during antenatal period may be risk factors. The prevalence of Anal incontinence during pregnancy and postpartum period remains unclear. Diversity may be a result of various definitions, and measuring tools used in studies, so far the consensus is that Obstetric Anal Sphincter Injury of grade 3 and 4 are strongly associated with anal incontinence.[6,7]

This study aims to assess the frequency of Urinary incontinence, Anal incontinence, and Double incontinence during pregnancy and observe changes in the immediate postpartum period and a year after.

Methodology

This prospective, multi centric cohort study was carried out at two different hospitals including Quaid e Azam International Hospital which is a 400 bedded tertiary care center and Al Sadiq SSH a 50 bedded private hospital. The period of study was one year from March 2018 to February 2019. Ethical approval was granted by the ethical committee if Quaid e Azam International Hospital. period prevalence of this study was limited to early and mid pregnancy till one-year postpartum. Women were recruited to the study with inclusion criteria being nulliparous at >24 weeks of gestation according to LMP. Those reporting after 30 weeks, multiple pregnancies, any placental or congenital anomaly were excluded. Participants were recruited after explaining all the objectives and requirements of the study. Written consent for willingness to participate was obtained from all, confidentiality was assured through anonymity. As motivation participants were offered a percentage discount for follow up postnatal visits. Free vitamin and calcium supplements were also offered. For those who still found it difficult to respond, telephonic conversation or video calls were used to obtain information.

Symptomatic patients were divided into Group A and B according to the mode of delivery as vaginal and cesarean section respectively. Vaginal delivery group was further studied for the application of instruments; perineal injury was also noted. These patients were followed at 6 weeks and 12 months postpartum. The severity index developed by Sandvik et al was used for measurement of urinary symptoms as it is sensitive, short, easy, valid, and reliable.[9] The questionnaire comprised two questions. The first was to determine how often the urine leakage was experienced and the scoring was 0=never,1= less than once a month, 2=one or more twice a month, 3= one or several times a week,4=one or several times a day or night. The second question was to determine how much urine was lost each time the score was allotted as follows; 0=dry,1= a few drops 2= more. The total score was calculated as a score of the question 1 multiplied by a score of question 2 and was categorized as 0=dry,1-2 as slight, 3-4 as moderate,6-8 were severe. We added a very severe category to our study for those who had a higher score.

Evaluation of fecal incontinence was done according to St. Mark's score with a little modification. Type of incontinence was determined as leakage of gas, liquid or solid and frequency was scored as 0; rarely referring to one episode in the said period as 1, whereas when reported sometimes that is one or more episodes in the last four weeks a score of 2 was allocated. Frequency reported as usually meaning 1 or more episodes in a week and always were marked as 3 and 4. Additional questions were asked and need to wear a pad and use of constipating medicines each scored 2 whereas a score of 4 was allocated for inability to defer defecation for 15 minutes. The collected data was thoroughly analyzed through the program of SPSS version 22.

Results

Maternal factors such as obesity, parity, age and obstetric factors such as mode of presentation, the use of forceps, and the size of baby influencing the incidence of perineal tears were taken into consideration. The mean age of females was 24.32±13.96 years and mean gestational age BMI and other at presentation was 26.21±7.18 weeks are described as well as other demographics of the patients are also described in Table I.

Table I: Demographics of patients. N (120)

Age	24.32±13.96
Gestational age at presentation	26.21±7.18
BMI	26.91±17.43
Booking status	
Booked	89 (74.2%)
Unbooked	31 (25.8%)
Gestational age at delivery	39.42±3.64

There were 20 (16.7%) participants who had a delivery through the lower segment cesarean section, while 82 (68.3%) had spontaneous vaginal delivery. As shown in

Figure 1, the vacuum was applied in 11 (9.17%)cases, while in 7 (5.8%) cases, forceps were used.

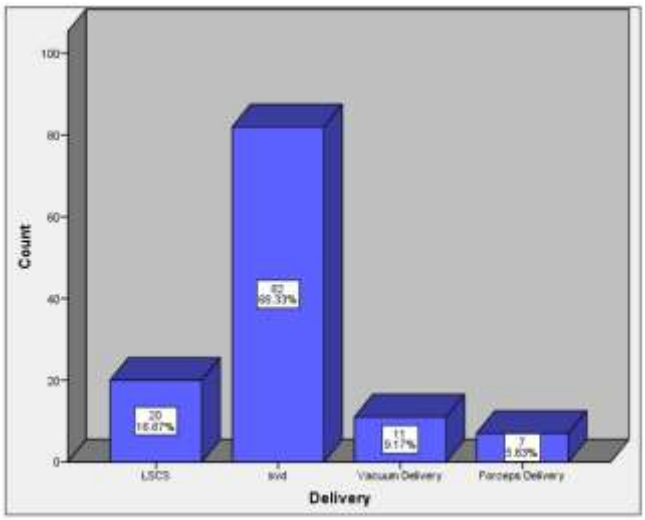

Fig 1: Mode of delivery.

Episiotomy was done in 72 (60%) cases, the extent of the perineal injury is shown in Table III while 16 (13.3%) females did not experience any sort of perineal injury. (Table II)

Table II: Perineal Injury observed

Episiotomy	72 (60.00)
Perineal tear 1 degree	06 (5%)
Perineal tear 2 Degree	04 (3.33%)
Perineal tear 3 degree	02 (1.6%)
None	16 (13.3%)

Table III: Urinary and fecal incontinence observed during follow-up

Urinary incontinence at	06 weeks postpartum	12 months after delivery	P value
None	55 (45.8%)	73 (60.8%)	
Slight	27 (22.5%)	13 (10.8%)	
Moderate	30 (25%)	31 (25.8%)	0.003
Severe	5 (4.2%)	2 (1.7%)	
Very severe	3 (2.5%)	1 (0.8%)	
Fecal incontinence at			
None	92 (76.7%)	103 (85.8%)	
Slight	13 (10.8%)	13 (10.8%)	0.002
Moderate	12 (10%)	3 (2.5%)	
Severe	3 (2.5%)	1 (0.8%)	
Double incontinence			
Yes	17 (14.2%)	11 (9.2%)	<0.001
No	103 (85.8%)	109 (90.8%)	

Urinary and fecal incontinence observed during follow-up is shown in Table III. At 6 weeks follow up a significant effect of mode of delivery on incontinence both urinary and fecal was seen as shown in Table IV. Fecal incontinence was also significantly higher in females having vaginal delivery, instrumental vaginal delivery resulted in significantly higher rate of incontinence at 6 weeks postpartum and 12 months of delivery ($p<0.05$), more so ever no patient showed fecal incontinence who underwent cesarean delivery. Double incontinence was although low whether females who delivery through assisted or spontaneous vaginal delivery, but significantly lower in females who delivered through cesarean section. Table IV

Discussion

Incontinence both urinary and fecal are more common conditions than considered and the incidence is known to rise during pregnancy. The range is variable accounting for 17.9 -71% as reported in the literature.[10] One of the main reasons for this diversity is that many women are reluctant to discuss and report this problem depending on educational status and social norms. This study is significant in providing data on both urinary and fecal incontinence from a social set up where women are timid and unforthcoming about such issues.

Maternal factors such as obesity, parity, age, and obstetric factors such as mode of presentation, the use of forceps, and the size of the baby all influence the incidence of perineal tears.[11] In a study carried out in Malaysia[12] at 6 weeks post partum incidence of urinary incontinence was as low as 5.2% whereas in our study it was sizable(54.16%). The reason behind this may be high threshold for operative delivery and a higher rate of instrumental vaginal births in the study population.[13]

A systematic review by Pretlove et al on the mode of delivery and post partum AI at 1 year found convincing association with mode of delivery.[14] This study has also shown that mode of delivery has a significant impact on patient's life as there is an increased likelihood of incontinence urinary and/or fecal incontinence in women undergoing vaginal delivery, the risk is increased with operative vaginal delivery and is highly associated with the extent of the perineal injury. This is in consistent with Scandinavian study showing that patients having a vaginal mode of delivery complicated by anal sphincter injuries OASIS had higher rate of anal incontinence. [15] In this study severe symptoms were seen in (n=3) and no one reported with very severe symptoms. Twelve months later AI appeared to have settled and only one participant was left with severe

Table IV: Effect of Mode of delivery on Incontinence

		Mode of delivery				P-value
		LSCS (n=20)	**Spontaneous vaginal delivery (n=82)**	**Vacuum Delivery (n=11)**	**Forceps Delivery (n=7)**	
Urinary incontinence at						
6 weeks postpartum	None	20	32	3	0	<0.001
	Slight	0	23	2	2	
	Moderate	0	24	4	2	
	Severe	0	2	1	2	
	Very severe	0	1	1	1	
12 months after delivery	None	20	46	5	2	<0.001
	Slight	0	13	0	0	
	Moderate	0	22	5	4	
	Severe	0	1	1	0	
	Very severe	0	0	0	1	
Fecal incontinence at						
6 weeks postpartum	None	20	65	5	2	<0.001
	Slight	0	11	0	2	
	Moderate	0	5	5	2	
	Severe	0	1	1	1	
12 months after delivery	None	20	76	5	2	<0.001
	Slight	0	4	5	4	
	Moderate	0	2	1	0	
	Severe	0	0	0	1	
Double incontinence at						
6 weeks postpartum		0	6	6	5	<0.001
12 months after delivery		0	5	3	3	0.001

symptoms, n=3 and 13 were seen to have moderate and slight. Double incontinence n=2 (1.6%) during pregnancy 14.16%n= 17 seems to be a bit higher than literature 3% in Nigeria. Obstetric anal sphincter injuries have shown a four-fold increase in the risk of DI.[16]

In our study, episiotomy was performed in 72 (60%) cases, 1st degree perineal tears occurred in 6 (5%) cases, 2nd degree perineal tears occurred in 04 (3.33%) cases and 3rd degree perineal tears occurred in 02 (1.66%) cases, while 16 (13.3%) females did not experience any sort of perineal injury during 6 weeks postpartum and 12 months of delivery. De Souza et al., found that among females delivered vaginally, 50% had episiotomy, and 6%, 14%, and 3% had 1st, 2nd and 3rd degree perineal tears, respectively.[17] In this study, we saw a significant effect of mode of delivery on urinary incontinence, fecal incontinence and double incontinence after 6 weeks and 12 months of delivery. Vaginal delivery was indicative of urinary incontinence as compared to those undergoing cesarean delivery. Not a single female who underwent cesarean delivery showed fecal incontinence ($p<0.05$). Cesarean section definitely reduces the risk of perineal injury and incontinence[18] however there is conflicting evidence of its benefits in the prevention of postpartum.[19]

Lawrence et al. found that 448 females underwent vaginal delivery. Among them, 151 had 2nd degree or deeper perineal trauma while 297 had intact perineum or minor trauma. About 74.8% of females presented after 6 months for follow up. Perineal trauma was not associated with urinary or fecal incontinence, decreased sexual activity, perineal pain, or pelvic organ prolapse. Thus, it was concluded that females who had 2nd degree tears are not at higher risk for pelvic floor dysfunction other than more pain, and slightly lower sexual function scores at 6 months postpartum.[20]

Boyles et al. presented results as similar to the results of our study. They showed that women who had vaginal deliveries were more likely to have urinary incontinence than women who had cesarean deliveries (odds ratio 4.96 [95% CI; 3.82-6.44]). This risk increased with assisted delivery and perineal laceration. It was concluded that urinary incontinence is a common finding in the immediate postpartum period after delivery. However, vaginal delivery raised the hazard for urinary incontinence, labor and pushing alone without vaginal delivery do not appear to increase this risk significantly.[21]

The strength of this study is the methodology that enabled data collection and follow up of women for more than a year in a social setup where women are

not regular in medical checkups. For the average socioeconomic group, a discount in health services and free supplements proved to be effective whereas telephonic conversations and video calls were responded well by all. In a study carried out in rural Sind Pakistan UI is reported as 11.5% as very few patients reported to a doctor.[22]

Limitations of this study were that despite all efforts number of non respondants and those lost to follow up was still considerable. Quite a few became pregnant again during the year after index birth and had to be excluded from the study.

Due to resources constraint elective cesareans as compared to those carried out after trial of vaginal delivery could not be studied and be compared.

Conclusion

Urinary and fecal incontinence are devastating conditions prevalent amongst women during the postpartum period. Are more common after vaginal delivery especially operative vaginal delivery. Perineal injury contributes a lot towards the severity of symptoms. Preventive measures are needed in the region.[23] Postpartum perineal exercises need to be promoted.

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