The Professional Medical Journal
www.theprofesional.com

https://doi.org/10.29309/TPMJ/2020.27.11.5516

ORIGINAL PROF-0-5516

The frequency of post-partum urinary retention (PPUR) and factors contributing PPUR after vaginal delivery.

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Article received on:
09/07/2020
Accepted for publication:
08/09/2020

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ABSTRACT… Objective: To determine the frequency and factors contributing to post-partum urinary retention (PPUR) after vaginal delivery. **Study Design:** Observational study. **Setting:** Department of Obstetrics and Gynecology, Gambat Institute of Medical Sciences Gambat, Khairpur Sindh. **Period:** 1st November 2018 to 30th June 2019. **Material & Methods:** Out of 114 patients delivered vaginaly at Gambat Institute of Medical Sciences Gambat, Khairpur Sindh, postnatal patients who do not urinate within 6 hours after normal viginal delivery, label as a case of PPUR following the inclusion and exclusion criteria. **Results:** Frequency of postpartum urinary retention (PPUR) after vaginal delivery was observed in 6.14% (7/114). Significant risk Factors contributing to post-partum urinary retention (PPUR) were Prolong labor and epidural analgesia. **Conclusion:** We concluded that statistically significant risk factors for postpartum urinary retention were epidural analgesia and prolong labor. So attention to bladder care during labor and vigilance in the early detection.

Key words: Postpartum Urinary Retention (PPUR), Risk Factors, Vaginal Delivery.

Article Citation: Khatoon H, Naz A, Mushtaq N, Farzana, Aahuja K, Safia. The frequency of post-partum urinary retention (PPUR) and factors contributing PPUR after vaginal delivery. Professional Med J 2020; 27(11):2463-2468. https://doi.org/10.29309/TPMJ/2020.27.11.5516

INTRODUCTION

Postpartum urinary retention is a common and potentially morbid situation that occurs if it is not quickly recognized and managed.[1] The specific incidence isn't clear because of undiagnosed asymptomatic cases, however as indicated by the literature, the evaluated rate of postpartum urinary retention (PPUR) has a wide range somewhere in the range of 0.05% and 37%. Multi factors are involved to developed PUR likely; during delivery anatomical changes is occurred, for example, bladder descent through pushing because of birth-related pelvic floor injury may disturb normal voiding by causing obstruction, loss of awareness of bladder filling, and inhibition of micturition.[2] The effects of these factors in assessing the impairment of voiding can be attributed to the observation that the incidence of PUR is higher in patients with epidural analgesia, episotomy and higher birth weight.[3,4]

Since Yip et al. proposed a distinction between overt and covert PUR in 1997, many authors have adopted these definitions, which has led to a more consistent comparison between studies that deal with this common problem.[5] Women who are unable to micturate spontaneously within 6 h of delivery are categorized as having overt (symptomatic) urinary retention. On ultrasound presences of more than 150mL post void residual bladder volume PVRV is Covert (asymptomatic) urinary retention. Some international studies also reported spontaneous recovery after some days to a normal PVRV in women with covert PUR."[6,7]

The exact pathophysiology of PUR is not yet understood. It is possible to have multiple reasons like physiological, neurological and mechanical processes in the postpartum period. Some complications like bladder dysfunction and urinary tract infection can be developed if late diagnosis of PUR.[8,9] Thus, we aimed to assess the frequency & risk factors that can predict the occurrence of PPUR in women who delivered vaginally.

MATERIAL & METHODS

This observational study was conducted at Department of Obstetrics and Gynecology, after the ethical approval of Gambat Institute of Medical Sciences Gambat, Khairpur Sindh, from 1st November 2018 to 30th June 2019. Non-Probability consecutive sampling technique was used. All 114 women were hospitalized for normal viginal delivery. All primi and multigravida women aged between 26 to 40 years with ≥38 weeks gestational age were included in study. Patients who do not urinate within 6 hours after normal viginal delivery, label as a case of PPUR. While exclusion criteria were who had urinary tract disease, neurogenic bladder, pelvic organ prolapsus or previous bladder surgery and diabeties mellitus. The women were interviewed & recorded on predesigned proforma including following data age, BMI, parity, gestational age and history of delivery including duration of labor, instrumental delivery, episiotomy, use of epidural analgesia. The collected of data were analyses using Statistical Package for Social Science (SPSS) software, Version 21.

RESULTS

A total of 114 women were included in this study. The average age of the women was 28.81±3.98 years with mean gestational age 38.34±0.88 weeks (Table-I). Means Body Mass Index (BMI) was 26.59±2.62 kg/m^2. Out of 114 women, 67(58.77%) were primigravida and 47(41.23%) had multigravida (Table-I). Duration of labor was 11.55±2. Frequency of postpartum urinary retention (PPUR) after vaginal delivery was observed in 6.14% (7/114) women. In our study observed prolong labor and epidural analgesia were significant contributing factor for PPUR while primipara, instrument delivery and episiotomy were not the significant factors. Significant Rate of PPUR was also observed among different age groups, gestational age and body mass index.

In Table-II showing post-partum urinary retentions were common in primiparity 4(57.1%) and episiotomy 4(57.1%). Post-partum urinary retentions was observed according to age groups. More commonly were observed below the age of 30 years (Table-III). While according to Gestational Age were observed more Postpartum urinary retentions in gestational age below and equal to 38 weeks (Table-IV).

DISCUSSION

Postpartum urinary retention is a medical condition that is not precisely identified or described by standard practices, but generally has a good prognosis.[10] The incidence of postpartum urinary retention was varies depends upon country to country ranging from 0.05% to 51.7% of all deliveries.[11] After vaginal delivery postpartum urinary retention was considered a minor complication.[12] Multiple etiological factors of PUR. In international study conducted by Ching-Chung et al in 2002, reported multiple factors are involved in PUR like physiological, neurological and mechanical processes.[13]

The development of postpartum urinary retention may have been caused by prolonged stages of delivery.

Variables	Mean	Std. Deviation	95% Confidence Interval for Mean		Median	IQR
			Lower Bound	Upper Bound		
Age in years	28.81	3.98	28.07	29.55	30	7
Gestational Age in weeks	38.34	0.88	38.18	38.51	38	1
Body Mass Index (kg/m^2)	26.59	2.62	26.10	27.07	26	2
Duration of labor (hrs)	11.55	2.13	11.16	11.95	12	2

Table-I. Descriptive statistics of characteristics of patients.

Variables	Post-partum urinary retention		Total	P-Value
	Yes	No		
Prolong Labor				
Yes	2(28.6%)	2(1.9%)	4(3.5%)	0.005
No	5(71.4%)	105(98.1%)	110(96.5%)	
Primiparity				
Yes	4(57.1%)	63(58.9%)	67(58.8%)	0.92
No	3(42.9%)	44(41.1%)	47(41.2%)	
Instrument Delivery				
Yes	2(28.2%)	10(9.3%)	12(10.5%)	0.108
No	4(71.4%)	97(90.7%)	102(90.7%)	
Mode of instrument delivery (n=12)				
Vacuum	2(100%)	7(70%)	9(75%)	0.387
Forceps	0(0%)	3(30%)	3(25%)	
Epidural Analgesia				
Yes	2(28.6%)	6(5.6%)	8(7%)	0.021
No	5(71.4%)	101(94.4%)	106(93%)	
Episiotomy				
Yes	4(57.1%)	71(66.4%)	75(65.8%)	0.62
No	3(42.9%)	36(33.6%)	39(34.2%)	

Table-II. Descriptive statistics of variable of PPUR.

Variables	Age Below and Equal to 30 Years		P-Value	Age Above 30 Years		P-Value
	PPUR			PPUR		
	Yes n=5	No n=73		Yes n=2	No n=34	
Prolong Labor						
Yes	2(40%)	1(1.4%)	0.005	0(0%)	1(2.9%)	0.81
No	3(60%)	72(98.6%)		2(100%)	33(97.1%)	
Primiparity						
Yes	4(80%)	52(71.2%)	0.67	0(0%)	11(32.4%)	0.33
No	1(20%)	21(28.8%)		2(100%)	23(67.6%)	
Instrument Delivery						
Yes	1(20%)	10(13.7%)	0.69	1(50%)	0(0%)	0.005
No	4(80%)	63(86.3%)		1(50%)	34(100%)	
Epidural Analgesia						
Yes	1(20%)	5(6.8%)	0.28	1(50%)	1(2.9%)	0.11
No	4(80%)	68(93.2%)		1(50%)	33(97.1%)	
Episiotomy						
Yes	4(80%)	58(79.5%)	0.97	0(0%)	13(38.2%)	0.27
No	1(20%)	15(20.5%)		2(100%)	21(61.8%)	

Table-III. Age groups distribution.

Variables	Gestational Age Below and Equal to 38 Weeks		P-Value	Gestational Age Above 38 Weeks		P-Value
	PPUR			PPUR		
	Yes n=5	No n=70		Yes n=2	No n=37	
Prolong Labor						
Yes	2(40%)	1(1.4%)	0.005	0(0%)	1(2.7%)	0.81
No	3(60%)	69(98.6%)		2(100%)	36(97.3%)	
Primiparity						
Yes	3(60%)	39(55.7%)	0.85	1(50%)	24(64.9%)	0.66
No	2(40%)	31(44.3%)		1(50%)	13(35.1%)	
Instrument Delivery						
Yes	2(40%)	3(4.3%)	0.002	0(0%)	7(18.9%)	0.49
No	3(60%)	67(95.7%)		2(100%)	30(81.1%)	
Epidural Analgesia						
Yes	2(40%)	5(7.1%)	0.015	0(0%)	1(2.7%)	0.81
No	3(60%)	65(92.9%)		2(100%)	36(97.3%)	
Episiotomy						
Yes	3(60%)	46(65.7%)	0.78	1(50%)	25(67.6%)	0.61
No	2(40%)	24(34.3%)		1(50%)	12(32.4%)	

Table-IV. With respect to gestational age.

We found that the second and third phases of labor increased the risk of PPUR, but the duration of the active phase was not related to postpartum.[14] A possible mechanism is applied mechanical strength, which contributes to pelvic nerve damage leading to neurologic impairment of the bladder. International studies also reported that prolonged labor developed PPUR.[15] In our study observed 28.6% developed PPUR after vaginal delivery. International study conducted by Kekre et al in 2011, it was reported prolonged second stage of labor increased chance to developed PPUR.[16]

The most important predisposing risk factors for postpartum urinary retention are instrumental delivery leds to tissue oedema and detrussor muscle injury.[17] In our study 2(28.2%) cases developed PPUR due to instrumental delivery. While in the study of A Yarci Gursoy[18] also reported that instrumental delivery- forceps or vaccum, are commonly developed voiding dysfunction after vaginal delivery. In our study instrument delivery was significantly associated with PPUR in above 30 years of age women (p=0.0005). According to Lamblin G et al; reported significant risk factor for PPUR were forceps or vacuum assisted delivery and may affect the ability of the urethral sphincter to relax. Perineal trauma may be occurred due to instrumental vaginal delivery also risk factor for PPUR.[19]

Our results show that episiotomy independently affects function of bladder after vaginal delivery. The repair with stitches after episiotomy as a predictor is probably responsible for the development of the effect of pain and subsequent disturbance in bladder sensitivity and also central inhibition of bladder function.[20]

There is a lot of conflicting research in the literature, some suggest the use of neuraxial anesthesia compared to other pain management methods including the Bradley method, associated with the risk of PPUR development, the rest could not be found by any association.[21] Our results are in line with specific international research. Many authors have reported a link between the effects of epidural anesthesia on the bladder and urine retention.[22,23]

In our study, parity, length of labor, instrumental delivery, epidural anesthesia and episiotomy significantly increase the risk of PPUR. Over

all frequency of PPUR in our study was 6.14%. Study conducted by Izumi Kawasoe in Japan and reported prevalence of postpartum urinary retention was 1.2%.[24]

CONCLUSIONS

We concluded that statistically significant risk factors for postpartum urinary retention were epidural analgesia and prolong labor. So attention to bladder care during labor and vigilance in the early detection. Initiatives for the prevention and management of postpartum urinary retention are necessary.

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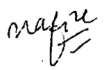
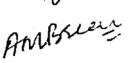
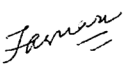
AUTHORSHIP AND CONTRIBUTION DECLARATION

Sr. #	Author(s) Full Name	Contribution to the paper	Author(s) Signature
1	Hafiza Khatoon	Conception and design, Statistical expertise, Critical revision of the article for important intellectual content.	
2	Ambreen Naz	Data collection Critical revision of the article for important intellectual content.	
3	Nousheen Mushtaq	Data collection, Critical revision, Drafting of the article.	
4	Farzana	Data collection.	
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