Prevalence of Genital Tract Lacerations During Labor

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ABSTRACT

Aim of study*: to determine the prevalence, demographic characteristics and pattern of lower genital tract injuries in labor at Aleppo University Hospital of Obstetrics & Gynecology.*
Study design: *This observational prospective study included all women who had delivered in Aleppo University Hospital of Obstetrics & Gynecology and had genital tract injury between 1/1/2019 and 1/1/2020. A total of 7459 had delivered in the hospital at that period, of which 4125 had vaginal delivery and 3334 had caesarian section.*
Results: *A total of 393 women (5.26 % of labors) during the study had a kind of genital tract laceration. Complete and incomplete uterine ruptures formed about 14.6% of injuries, whereas first degree perineal tears were the leading types of genital tract laceration(64%).On the other hand; third and fourth degree perineal tears were rare. It is noticed that BMI was higher in third(3b) and fourth degree of perineal tears. Also, all of third(3b) degree perineal tears were nulliparus with a mean age of(19) compared with higher ages in the other types of lacerations. It is noticed that neonatal birth weight was higher in sever degrees of perineal tears compared with mild ones. Also, the duration of expulsion stage was longer among second and third(3a)degrees of perineal tears compared with the other types of perineal lacerations.*
Conclusion: *Genital tract lacerations are common in labor, they were observed in 5.26% of women. Of these injuries, complete uterine rupture formed 7.8%, cervical tears 14.5% and perineal tears of first degree 61.6%. Low maternal age, nulliparity, second parity, high BMI, and high birth weight should all be noticed in labor as they have important relation with lower genital tract injuries .*

Keywords: cervical, laceration, labor, perineal, rupture, uterine.

I. INTRODUCTION

Genital tract injuries during labor contains lacerations of the cervics , vagina , perineum and uterus. Of these injuries, uterine rupture is a complication of pregnancy associated with severe maternal and fetal morbidity and mortality. In high income countries it most commonly occurs in women who have previously delivered by caesarean section [1]. Recent reports of an increased risk of morbidity, particularly due to uterine rupture, are thought to have contributed to a marked decrease in some countries in the number of women attempting vaginal birth after caesarean section [2].

Birth trauma following vaginal delivery is associated with postpartum morbidity and mortality and the complication is directly related to the severity of perineal trauma [3].

Rate of trauma was estimated at 41% of child bearing women in 2003, with significant morbidity [4]. The morbidity of perineal lacerationms is attributed to; (1)Perineal pain which is reported to be most severe in the immediate postnatal period, (2)dyspareunia, (3)fecal and urinary incontinence, and psychological and social problems that may affect the woman's ability to care for her new baby [5].

Generally, the degree of morbidity is directly related to the degree of the perineal injury sustained, that is, first and second degree perineal trauma causing less severe morbidity than third and fourth-degree tears[5].

Numerous factors have been suggested as potential determinants of perineal trauma. Nulliparity, maternal age greater than 30 years, a large baby (both weight and head circumference), a prolonged second stage and malposition increase the risk for perineal tears[5]. Also, Physical inactivity before pregnancy may represent an independent risk factor for third- and fourth-degree injuries [5].

Therefore, the aim of this study is to determine the prevalence, demographic characteristics and pattern of lower genital tract injuries in labor at Aleppo University Hospital of Obstetrics & Gynecology. The study is important to obstetric care givers to know the common lower genital tract injuries for better care of women in labor.

II. Materials and Methods

This observational prospective study included all women who had delivered in Aleppo University Hospital of Obstetrics & Gynecology and had genital tract injury between 1/1/2019 and 1/1/2020. A total of 7459 had delivered in the hospital at that period, of which 4125 had vaginal delivery and 3334 had caesarian delivery.

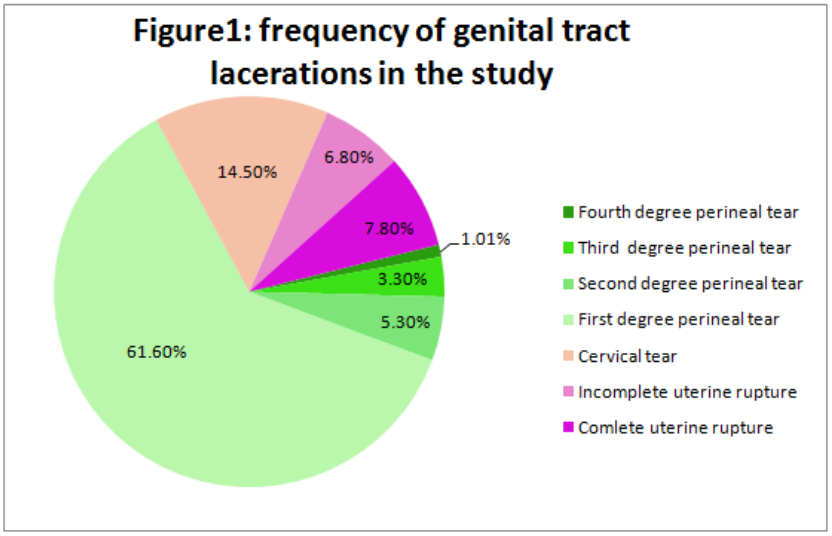
Uterine injuries included complete and incomplete ruptures of uterus, whereas lower genital tract lacerations were divided into cervical and perineal tears. Classification of perineal tears was first, second, third and fourth degree, according to the classification of Royal College of Obstetricians and Gynecologists(table1) [6]. Third-degree is also classified as 3a where less than 50% of the external anal sphincter is torn; 3b where more than 50% of the external anal sphincter is torn [5].

Table1:Classification of perineal tears according to the Royal College of Obs & Gyne	
First degree	injury to perineal skin only
Second degree	perineum and perineal muscles affected, but not involving the anal sphincter
Third degree	injury to perineum involving the anal sphincter complex
Fourth degree	injury to perineum involving the anal sphincter complex and anal mucosa

III. Results

A total of 393of women (5.26%) during the study had a kind of genital tract laceration. The type and frequency of these lacerations are shown in **table2**.

Table 2 : The type and frequency of genital tract lacerations in the study		
Type of injury	**Number**	**Frequency (in the hole number of injuries)**
Comlete uterine rupture	31	7.8 %
Incomplete uterine rupture	27	6.8 %
Cervical tear	57	14.5 %
First degree perineal tear	242	61.6%
Second degree perineal tear	21	5.3%
Third degree perineal tear(3a)	7	1.78%
Third degree perineal tear(3b)	6	1.52%
Fourth degree perineal tear	4	1.01%



Complete and incomplete uterine ruptures formed about 14.6% of injuries, whereas first degree perineal tears were the leading types of genital tract laceration(61.6%) **figure1** .On the other hand; third and fourth degree perineal tears were rare.

The demographic characteristics of women with uterine rupture in the study are shown in **table 3**. All of them had one or more previous caesarian section.

Table 3: Demographic characteristics of women with uterine rupture in the study

	Complete uterine ruptures			Incomplete uterine ruptures		
	mean	standard deviatin(SD)	range	mean	standard deviatin(SD)	range
Age(years)	29.6	6.06	19-42	29.2	6.05	17-38
Previous Caesarian deliveries	4.1	2.54	1-11	2.4	1.5	1-5
BMI (kg/m2)	27.2	3.78	21-40	25.6	3.40	20-34
Neonatal birth weight(gr)	3183	523	1800-4300	3044	493	1600-3700

Compared with incomplete uterine rupture, complete uterine ruptures had higher number of previous caesarian deliveries, higher BMI, and higher birth neonatal weight.

The relationship between the types of lower genital tract lacerations and age, parity and BMI are shown in **table4** and **table5**. It is noticed that BMI was higher in third and fourth perineal tears **figure2**. Also, all of third(3b)degree perineal tears were nulliparus with a mean age of(19) compared with higher ages in the other types of lacerations. It is also noticed that cervical lacerations were most nulliparus or have one previous parity.

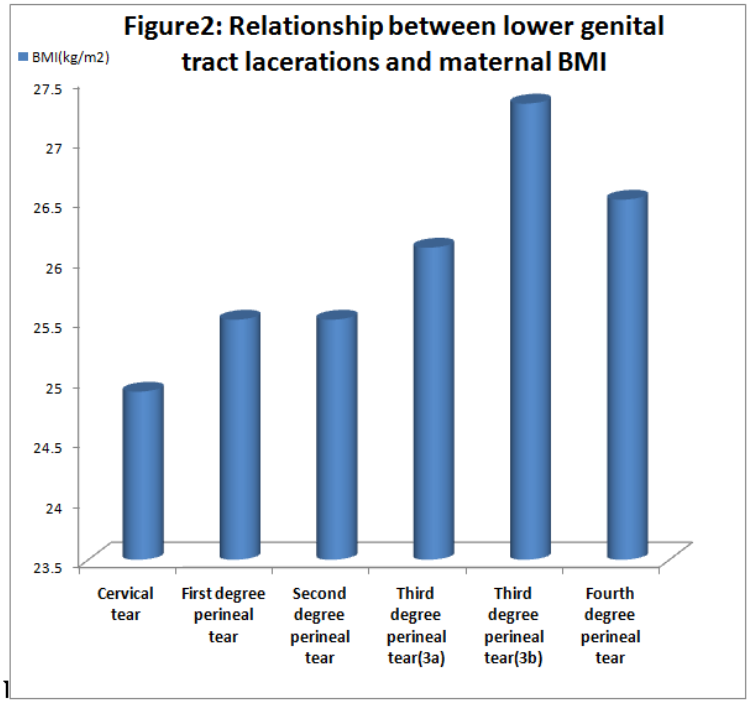


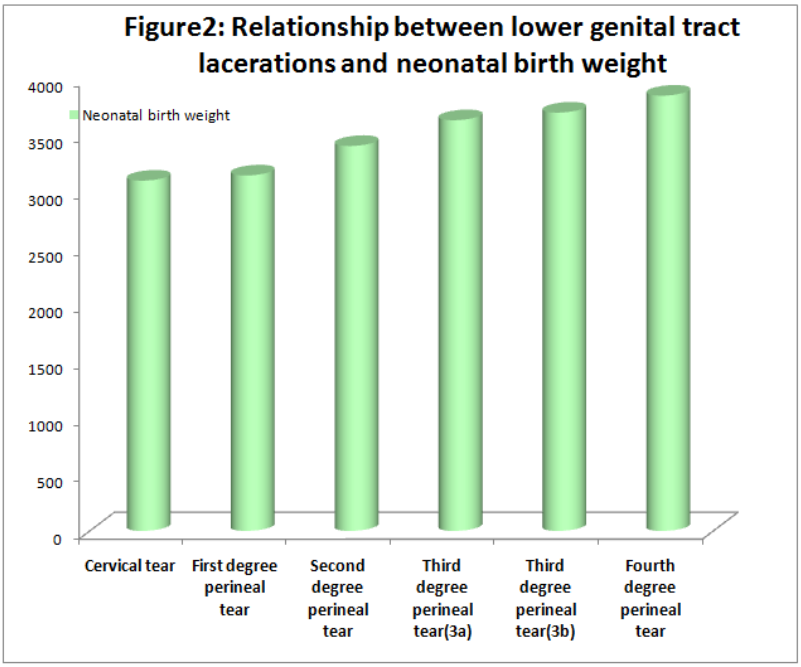
Table 4: Demographic characteristics of women with cervical tears or first and second degree perineal tears

	Cervical tear			First degree perineal tear			Second degree perineal tear		
	mean	SD	range	mean	SD	range	mean	SD	range
Age	23.1	6.3	16-43	25.2	6.5	14-43	27.1	6.6	18-41
Previous deliveries	0.76	1.3	0-7	3.5	4.5	0-9	1.63	1.1	0-5
BMI	24.9	3.4	17.5-40	25.5	3.8	19-40	25.5	3.2	22-34
Neonatal birth weight(gr)	3098	405	1800 - 4200	3144	478	1500-4300	3405	451	2800-4300
Expulsion stage duration (minutes)	17.8	13.7	3-60	9.3	7.9	2-60	14.7	25.1	3-105

Table 5: Demographic characteristics of women with third and fourth degree perineal tears

	Third degree perineal tear(3a)			Third degree perineal tear(3b)			Fourth degree perineal tear		
	mean	SD	range	mean	SD	range	mean	SD	range
Age	25.1	7.5	16-39	19	1	18-20	26.5	12.2	18-35
Previous deliveries	0.66	1.6	0-4	0	0	0	3	4.2	0-6
BMI	26.1	1.83	22-27	27.3	1.5	26-29	26.5	4.9	26-27
Neonatal birth weight (gr)	3633	564	2900-4300	3700	608	3000 - 4100	3850	353	3600-4000
Expulsion stage duration (minutes)	39.1	43.6	5-120	11.66	2.9	15-20	6.5	1.9	3-10

Table 4 and table 5 also shows the relationship between lower genital tract lacerations and neonatal birth weight. As noticed, mean neonatal birth weight was higher in 3a ,3b and 4 degree perineal tears **(figure 3)**. Also, the duration of expulsion stage was longer among third degree(3a) perineal tears compared with the other types of perineal lacerations.



IV.Discussion

Genital tract injuries are common and frequent complication of vaginal delivery. The prevalence of genital tract injuries in this study is 5.26%. This is lower than 12.35% recorded by Kaur et al [7], in India and higher than 5.06% in Pakistan [8]. The reason for higher prevalence of lower genital tract injuries in the study in India may be due to the different age groups, referral cases, and place of delivery.

The most predominant lower genital tract injury in our study was first degree perineal tear. This finding is similar to a study in Zaria, Nigeria [9]. Other common spontaneous lower genital tract trauma in this study includes second ,third ,fourth degree perineal tear, and cervical laceration.

Lower genital tract injuries following vaginal birth were found to be related to age and parity , as it was noticed that the mean ageof women with these tears were between 23-27 years. And all of third degree(3b) perineal lacerations were nulliparus, this may be due to rigid perineum or restricted use of episotomy. A hospital study in America on first vaginal delivery documented that the risk of a subsequent perineal tear was highest amongst those who had an episiotomy or perineal tear in the first vaginal birth in comparison with those of intact perineum [10].

Perineal lacerations of second, third and fourth degree had neonatal birth weight range of(2800-4300 gr) with mean neonatal weight higher in worse degrees than in mild degrees. This agrees with what the Ashiem systematic review concluded in 2017,when it considered " large baby" one of the potential determinants of perineal trauma[5].

The relationship between parity and type of lower genital tract injuries revealed that third degree perineal lacerations3b were commonest among women having their first vaginal birth (para 0). Whereas cervical

tears were commonest among women having their first or second vaginal birth. The reason may be due to cervical scar disruption, unsupervised and premature bearing down resulting in cervical tear.

Third and fourth perineal lacerations were rare in the study. And in relation to BMI, it was noticed that BMI was higher in these sever types of injuries compared with other lower genital tract lacerations. This agrees with Voldner study in 2009 which revealed that Physical inactivity before pregnancy may represent an independent risk factor for third and fourth-degree tears [5, 11].

V. CONCLUSION

Genital tract lacerations are common in labor, they were observed in 5.26% of women. Of these injuries, complete uterine rupture formed 7.8%, cervical tears 14.5%, perineal tears of first degree 61.6%, whereas, second, third and forth perineal tears formed 5.3%, 3.3% and 1% respectively. Neonatal birth weight became higher in severe degrees of perinial injuries(3850 , 3700 and 3633gr respectively in fourth , third3b and third3a degrees) compared with (3405and 3144gr respectively in second and first degree perineal tears).Third degree(3b) perineal lacerations were seen in nulliparous only, while cervical lacerations were most seen in those in their first or second vaginal labor. Also, BMI was higher in third and fourth degree perineal lacerations.

Factors such as low maternal age, nulliparity, second parity, high BMI, and high birth weight should all be noticed in labor as they have important relation with lower genital tract injuries .

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