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Measure Incidence of 3rd and 4th degree perineal tear among pregnant ladies in King Abdulaziz Medical City, Jeddah - delivering vaginally and assisted vaginal deliveries

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Abstract

Objective:*The aim of the present study is to assess the incidence of 3rd and 4th perineal tear among patient who deliver vaginally or with assisted vaginal delivery in King Abdulaziz Medical City (KAMC) Jeddah.*

Methods:
Settings: *A population based retrospective cohort study conducted all deliveries with 3rd and 4th vaginal tear analyzed from January 2016- January 2019 in King Abdulaziz Medical City, Jeddah. The hospital has around 3400 deliveries per year.*
Subjects: *There was a total of 10,517 deliveries from January 2016 until January 2019. A total of 3,357 (31.9%) Cesarean sections delivery were excluded from the study.*

Results*:*

Parity: *It has a great impact of having a 3rd and 4thperineal tear in about 113 cases were nulliparous. Total of 78.2% of women had sever perineal tear were nulliparous.*

Instrumental delivery: *In our study ventouse delivery account for 40% of all delivery with 3rd and 4th degree perineal tear. Whereas forceps delivery account for 2.1 %.*

Episiotomy: *After reviewing the data, total number of patients who had episiotomy from january 2016 until january 2019 were 1059 cases about 45 cases had sever perineal tears (4.2 %).*

Position: *In our study about 52.77 % are undetermined position ,36.8% are occipitoanterior position and 9% are occipitoposterior, as observed undetermined vertex position is high.*

Anesthesia and suturing: *Patients who had local anesthesia were 51.7 %, epidural 35.2 %, spinal 6.9 %. About 86.9 % of cases were suture in labor and delivery room. 12.4 % of cases were suture in operating room*

Conclusion*: Result from our study showed that instrumental delivery and nulliparity are major risk factors for having sever perineal tears.*

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Keywords:*perineal tear, instrumental delivery, third tear, furth tear, Saudi Arabia*

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Introduction:

Obstetrical care frequently faces dilemmas in the management of the second stage of labor. The decision to whether or not a particular birth assistance needed depending on the urgency of the case, experience and skills of the obstetrician and the timing of any intervention. Therefore, the decision must take in consideration the risks and the potential problems within the skills of the operator. Obstetricians should be confident and competent in the use of assisted vaginal delivery equipments i.e. ventouse and forceps (1).
Almost 10% of vaginal delivery in the western countries end up by ventouse or forceps delivery. With observation for the last few years the use of ventouse as assisted vaginal delivery was more than forceps worldwide. The reason of increase the usage of ventouse is the new design of vacuum cup with reduce risk of injury to the fetus and increase instrumental success rate. As instrumental assisted vaginal deliveries increase the risk of perineal laceration all four types. This is why obstetricians should know what are the difference between these types (2).
The four types of perineal laceration include:
First-degree tear: laceration is limited to the fourchetteand superficial perineal skin or vaginal mucosa.
Second-degree tear: laceration extends beyond fourchette, perineal skin and vaginal mucosa to perineal muscles and fascia, but not the anal sphincter.
Third-degree tear: fourchette, perineal skin, vaginal mucosa, muscles, and anal sphincter are torn; third-degree tears may be further subdivided into three types.
3a: partial tear of the external anal sphincter involving less than 50% thickness.
3b: greater than 50% tear of the external anal sphincter.
3c: internal sphincter is torn.
Fourth-degree tear: fourchette, perineal skin, vaginal mucosa, muscles, anal sphincter, and rectal mucosa are torn (3,4).

The incidence of obstetric anal sphincter injuries (OASIS) (in singleton, term, cephalic, vaginal birth) in England has tripled from 1.8% to 5.9% between 2000 to 2012.The overall incidence in the UK is 2.9% (range 0–8%), with an incidence of 6.1% in primipara compared with 1.7% in multipara (5).

A study was done in our region published in April 2018 in Security Forces Hospital, Riyadh, Saudi Arabia. It studied the rate of 3rd and 4th degree perineal tear and it's related risk factors in single Saudi center. A retrospective observational cohort study was done. The study concluded that risk factors for severe perineal tears: gestational age >40 weeks, nulliparity, moderate/ severe obesity, instrumental delivery, shoulder dystocia, active second stage more than 90 min, birth weight more than 4 kg, head circumference at birth more than 34 cm and length at birth of more than 50 cm. Risk factors still significant with obesity (OR=2.8, CI=1.3-6.1), instrumental delivery (OR=2.6, CI=1.2-5.6) and birth weight (OR=1.1/hg, CI=1.1-1.2). However, no incidence was mentioned in the results (1).

The aim of the present study is to assess the incidence of 3rdand 4th perineal tear among patient who deliver vaginally or with assisted vaginal delivery in King Abdulaziz Medical City (KAMC) Jeddah.

Materials and methods

Settings: *A population based retrospective cohort study conducted all deliveries with 3rd and 4th vaginal tear analyzed from January 2016- January 2019 in King Abdulaziz Medical City, Jeddah. The hospital has around 3400 deliveries per year. Data were extracted from data base software for antenatal care through Hospital System and from labor and delivery records. Patients who deliver vaginally (spontaneous and instrumental) and had 3rdand 4th degree perineal tear were included in the study.*
Subjects: *There was a total of 10,517 deliveries from January 2016 until January 2019. A total of 3,357 (31.9%) Cesarean sections delivery were excluded from the study.*
Inclusion criteria: *Patients between 18-45 years, with a singleton baby who deliver vaginally, with/without episiotomy, and with a singleton cephalic baby regardless the weight.*
Exclusion criteria: *All patient who didn't meet our criteria were excluded. A total of 10,517 deliveries, 144 of these deliveries had 3rd,4thperineal tears.*

Results

Parity: *Nulliparity is a one of the most important risk factor as shown in our results. It has a great impact of having a 3rd and 4thperineal tear about 113 cases were nulliparous. Total of 78.2% of women had sever perineal tear were nulliparous.*

Instrumental delivery: *As known instrumental delivery is a major risk factor of having 3rd and 4thperineal tear. In our study ventouse delivery account for 40% of all delivery with 3rd and 4th degree perineal tear. Where as forceps delivery account for 2.1 % of all deliveries with 3rd and 4thperineal tear. As shown in the table we have low number of instrumental deliveries but still with significant incidence of 3rd and 4thperineal tear.*

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		Frequency	Percent
Type Delivery	VAGINAL	84	57.9
	VENTOUSE	58	40.0
	FORCEPS	3	2.1
	Total	145	100.0

Table 1: *The percent and frequencies of patients who develop 3rd and 4th degree tear in crosstab with the type of delivery they underwent with.*

Episiotomy: *There is controversial evidence thatEpisiotomy can be a protective measures to prevent 3rd and 4th degree tears. After reviewing the data , total number of patient who had episiotomy from january 2016 until january 2019 were 1059 cases about 45 cases had sever perineal tears (4.2 %). In total cases who had sever perineal tears during this time as shown in table 2 were 114 , 68.3% of patients without episiotomy and 31% of patients had episiotomy (table 2).*

		Frequency	Percent	Total episiotomy during this time
Episiotomy	NO	99	68.3	6031
	YES	45	31.0	1059
	Total	144	99.3	7090

Table 2: *The percent and frequencies of the patients who earn a tear with and without episiotomy.*

Position: *It is a mandatory pre-requisite to determine position of the fetal head before applying an instrument. In our study about 52.77 % are undetermined position ,36.8% are occipitoanterior position and 9% are occipitoposterior. as observed undetermined vertex position is high.*

		Type of Delivery			
		VAGINAL	VENTOUSE	FORCEPS	Total
Position	OA	14	38	1	53
	OP	4	8	1	13
	OT	2	0	0	2
	UD	64	11	1	76
Total		84	57	3	144

Table 3: *this table shows the frequencies of fetus head position and type of delivery*

Anesthesia and suturing: *Evaluation and suturing of 3rd and 4th degree tear should be done under proper anesthesia and in proper sitting like operating room as recommended.*

patients who had local anesthesia were 51.7 %, epidural 35.2 %, spinal 6.9 %.
About 86.9 % of cases were suture in labor and delivery room. 12.4 % of cases were suture in operating room.

Discussion:

Age: *The mean age of having a 3rd and 4thperineal tear is 26 year old (12.4%).*

Nulliparity: *Nulliparous are the women who never go into labor with pregnancy above the gestational age of 20 weeks or the fetal weight below 500 g.*
The results showed nulliparous women has higher incidence of getting 3rd and 4th degree tear, in percent of 78.2% out of the total patients, nulliparous have the majority of the tears in total number of 113. Within the nulliparous, 55 patients develop 3A degree of tear, while 41 patients develop 3B degree (Table 4). As the nulliparous never had perinealdistention which means the tissue never undergo stretching that makes it more born for tearing. The progress of the nulliparous women is slower than the multiparous women, therefore; the perineal tissue is more exposure to ischemia because of the prolong head completion (12). Therefore, tissue after getting ischemia, the tissue would be weak to handle the pressure that coursed by the baby head and easily torn.

		Degree of Tear				
		3A	3B	3C	4.0	Total
Parity	P0	55	41	15	2	113
	P1	14	4	4	0	22
	P2	4	1	1	0	6
	P3	1	1	0	0	2
	4	0	1	0	0	1
Total		74	48	20	2	144

Table 4: *A descriptive table of the total patients who had degree of tears. In specific, this table show each parity group in crosstab with the degree of tear.*

Instrumental delivery*: one of the well-known risk factor of 3rd and 4th degree tear worldwide (11) . As reported by nationwide inpatient sample third degree laceration rate of 3.3 % and fourth degree laceration rate of 1.1%(13).*

A meta-analysis of data of 22 studies showed women who had severe lacerations, the strongest risk factors include forceps delivery (OR 5.50%, CI 3.17-9.55), ventouse delivery (OR 3.98,CI 2.60-6.09), mid line episiotomy (OR 3.82,1.96-7.42) and increase fetal birth weight (mean difference 192.88g, 95% CI 139.80-245.96) (4)). As per our labor and delivery recordsrate of ventuse delivery between year jan 2016-jan 2019 is 564 about 58 of those patient had severed perineal tear with the rate of (10.28%).

		Frequency	Percent	Total Delivery During This Time	Tearing Percent
Delivery Type	VAGINAL	84	57.9	6483	1.29
	VENTOUSE	58	40.0	564	10.29
	FORCEPS	3	2.1	43	6.98
	Total	145	100.0	100.0	

Table 4: the total delivery types from January 2016 to January 2019 and the percent of tearing within each delivery type.

Instrumental delivery should mimic normal delivery so the anatomy of the perineum and the shape of the birth canal should be in consideration. Any deviation from normal process can lead to complications (5). Universal prerequisites to do instrumental delivery should be followed:

As mentioned in the table below most of the deliveries are by residents (R3) total of 36 cases with percent of 24.8% and board certified residents (BCP) total of 41 cases with present of 28.3% (Table 5).

		Frequency	Percent	Cumulative Percent
Operator	R1	21	14.5	14.5
	R2	11	7.6	22.1
	R3	36	24.8	46.9
	R4	11	7.6	54.5
	R5	10	6.9	61.4
	BCP	41	28.3	89.7
	CONSULTANT	15	10.3	100.0
	Total	145	100.0	

Table 5: a descriptive table show the number of cases that develop sever perineal tear and what is the *level of the physician conducting the delivery.*

Determining the position of the head is required before applying assisted vaginal deliveries instruments. In our study about 38 cases are occipitoanterior position (OA), 8 cases occipitoposterior (OP) and 11 cases undetermined. AS recommended knowing the position is mandatory to help in which direction instrument should be moved while pulling. In case it was difficult for a junior to defined the position help can be asked from senior expert.

Episiotomy: *Routine episiotomy with instrumental delivery is not the practice any more. There are no data to support the use of routine episiotomy with operative vaginal delivery. Routine episiotomy with operative vaginal delivery is not recommended because poor healing and prolonged discomfort has been reported with mediolateral episiotomy (7).*
Several studies compare the different type of episiotomy (eithermidolateral and midline episiotomy) . As several retrospective studies have found an association between midline episiotomy and anal sphincter trauma with operative vaginal delivery (14).
Mediolateral episiotomy has lower risk of developing sever perineal tears with instrumental delivery (9).
After reviewing our records episiotomy was not done routinely, only for indicated cases. Total of 68.8% of patient who had 3rd and 4th degree perineal tear did not had episiotomy, 64.91% of ventouse delivery episiotomy was not done and 35.1% had episiotomy. In forceps delivery about 33.3% episiotomy was not done, 66.7% of forceps deliveries episiotomy was performed (Figure 1).

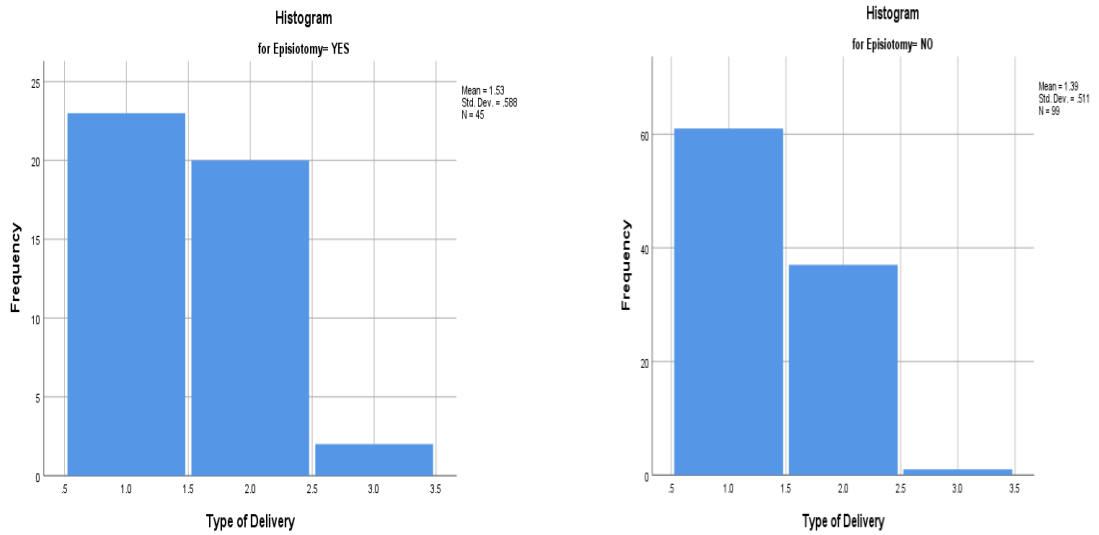

Figure 1: *illustrated the frequencies of tears among the patients who got episiotomy and the whom not got. The columns show Vaginal, Ventouse, and Forceps, respectively.*
Fetal weight: *fetal weight is a considerable risk factor of having sever perineal tear with instrumental deliveries. As was found by our study the greater risk of having tears was with fetal weight ranging from 3-3999 G. about 101 cases (with percentage of 70.1%) develop perinealtears, 33 cases with fetal weight of 2500-2999 G (with percentage of 22.9%) (Table 6). The higher the baby weight the more the injury to perineum because while delivering the fetus*

the perineal tissue will be over stretched and it will be more prone to torn especially if delivery was. Quick especially if fetal weight Is greater than 4 KG.
A study was done to compare fetal weight with degree of vaginal laceration. infants who had birth weights greater than 4,000 g and those who had birth weights between 3,000 g and 3,999 g. Infants with birth weights greater than 4,000 g had an overall injury rate of 1.6% compared with 0.4% in the lower birth weight group. (10)

30.		Frequency	Percent	Frequency of Fetal Weight During This Time	Fetal Weight Percent with Tear
Fetal Weight	<1000g	0	0	124	0
	1000g-1499g	0	0	128	0
	1500g-1999g	0	0	248	0
	2000g-2499g	7	4.9	969	0.7
	2500g-2999g	33	22.9	3192	1.0
	3000g-3999g	101	70.1	5803	1.7
	>4000g	3	2.1	214	1.4
	Total	144	100.0	10678	

Table 6: *the total fetal weight from January 2016 to January 2019 and the percent of tearing within each weight.*

In order to reduce such complication with fetal weight of 3kg and above protective measure can be done such mediolateral episiotomy at time of crowening. Good Perineal support to be done, eg. Left hand slowing down the delivery of the head, Rrght hand protecting the perineum., Mother slow pushing when head is crowning.
Conclusion:

In conclusion, as 3rd and 4th degree tear have a significant impaction on patients' quality of life, patient who develop such tears were evaluated in order to identified which risk factors is mostly causing 3rd and 4thperineal tears in our population. Our study showed that instrumental delivery and nulliparity are major risk factors for having sever perineal tears.

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