

A Prospective Observational Study of Lower Genital Tract Injuries in Multipara during Vaginal Deliveries in a Tertiary Institution

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Received: 20-03-2023 / Revised: 11-04-2023 / Accepted: 05-05-2023

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Conflict of interest: Nil

Abstract:

Background: This study was conducted to assess the incidence of maternal lower genital tract injuries, study the various types of maternal lower genital tract injuries during vaginal delivery and to assess complications and morbidity due to lower genital tract injuries.

Methods: This was a hospital-based prospective observational study conducted among 100 female patients admitted to the labour room for vaginal delivery in the Government General Hospital Kakinada, from December 2019 to October 2021 after obtaining clearance from the institutional ethics committee and written informed consent from the study participants.

Results: Majority of genital tract injuries occurred in the second gravida of about 69%, 1% of cases belong to the fifth gravida. 76% of cases are booked and 24% are unbooked. Among the women with co-morbidities, the frequency of genital tract injuries in preeclampsia was 10%. The frequency of genital tract injuries in GDM was 2%. The maximum number of genital tract injuries occurred in women with a normal duration of labour (78%). 62% of cases have a birth weight of 3.6-4 kg. 6% of cases have a birth weight of 2.5-3 kg. 60% of cases of genital tract injuries occurred during spontaneous delivery. 40% of cases of genital tract injuries occurred during outlet forceps delivery. 44% of cases were 2nd degree perineal tears. 2% of cases were cervical lacerations.

Conclusion: Skilled birth attendants in labour, vigilant labour monitoring, identifying risk factors such as perineal injuries in previous deliveries, a big baby, a timely episiotomy, a proper Ritgen's manoeuvre, timely and adequate suturing, the allocation of medical personnel depending on risk factors, the provision of emergency obstetric care services that are accessible and affordable, and perineal care in the postnatal period help a lot in reducing the rate of genital tract injuries and complications.

Keywords: Lower Genital Tract, Injuries, Multipara, Vaginal Deliveries.

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Introduction

Perineum is the area between the anus and vagina. Perineal injury will occur spontaneously as a laceration or intentionally as an episiotomy, especially during the first vaginal delivery with a rigid perineum. The incidence of perineal injury in labouring women is 30% to 85% and about 60% to 70% of these women will require suturing after child birth. Human child birth is seldom completed without the occurrence of at least the slightest injury to the birth canal and sometimes, even deep tearing may occur in spite of skill and care.[1] The perineum is the most common site of tear. The extent of the tear depends upon the care taken and skill displayed during delivery of the head. Birth trauma following vaginal delivery will be associated with postpartum

morbidity including mortality and complications are directly related to the severity of lower genital tract trauma.[2] The most commonly occurring maternal health problems after birth is perineal pain, which is a symptom highly associated with sustaining perineal injury during normal vaginal birth. Injury to external genitalia will occur spontaneously during normal vaginal delivery or as a complication of a surgical incision [Episiotomy to widen vaginal opening to facilitate birth thereby reducing the damage to perineum]. Various lower genital tract injuries observed during vaginal delivery include cervical laceration, vaginal laceration, episiotomy, perineal tears, vulval hematoma and paraurethral tears. Historically it is believed that episiotomy

reduced spontaneous perineal injury and anal sphincter tears by controlling the direct and extent of tissue damage.[3]

This is supported by a study in Spain where 87.5% of the diagnosed tears in spontaneous vaginal deliveries occurred in the absence of an episiotomy and nulliparous women who had spontaneous vaginal deliveries but didn't undergo an episiotomy were nine times more likely to prevent a tear than those who received an episiotomy.

In the United States approximately 3 million women give birth vaginally each year and most of them experience trauma to the genital tract from episiotomy, spontaneous obstetric lacerations or both.[4,5] It is recognized that lower genital tract injuries are associated with macrosomia, instrumental deliveries, first vaginal birth, shoulder dystocia, midline episiotomy, female genital mutilation and deliveries by untrained birth attendants.[6,7] Primary PPH is an important complication associated with lower genital tract injuries and make a significant contribution to maternal morbidity and mortality.[8] Postpartum infection, perineal pain, discomfort and dyspareunia may also complicate lower genital tract injuries, VVF, 3rd degree perineal tear and RVF are other very serious complications associated with perineal injury.

Obstetric fistula accounts for 84.1% -100% of all VVF with prolonged obstructed labour being the main culprit (65.9%-96.5%) in Nigeria with the highest incidence in Northern Nigeria.[9]

Aims and Objectives

- To study social and demographic factors in lower genital tract injuries in multipara during vaginal delivery.
- To assess the incidence of maternal lower genital tract injuries.
- To study the various types of maternal lower genital tract injuries during vaginal delivery.
- To assess complications and morbidity due to lower genital tract injuries.

Methods

This was a hospital-based prospective observational study conducted among 100 female patients admitted to the labour room for vaginal delivery in the Government General Hospital Kakinada, from December 2019 to October 2021 after obtaining clearance from the institutional ethics committee and written informed consent from the study participants.

Inclusion Criteria

- Women with more than one delivery were admitted to the labour room for vaginal delivery.

Exclusion Criteria

- All primigravida are admitted to the labour room for vaginal delivery.
- The genital tract trauma due to accidents, or due to any cause other than vaginal delivery.
- Injuries to the upper genital tract.
- Multipara who has not consented for the study.

Statistical Methods

Data was entered in MS Excel and analyzed using SPSS software. Results were presented as tables.

Results

Table 1: Distribution of Cases According to Birth Weight in Kg

| | Frequency | Percentage |
|---|------------|-------------|
| Pre-Eclampsia | 10 | 10% |
| Heart Disease | 1 | 1% |
| GDM | 2 | 2% |
| No | 87 | 87% |
| Distribution of Cases According to Women with Co-Morbidities | | |
| | Frequency | Percentage |
| Precipitate (<3 hours) | 17 | 17% |
| Normal (3 – 12 hours) | 78 | 78% |
| Prolonged Labour (>12 hours) | 5 | 5% |
| Total | 100 | 100% |
| Distribution of Cases According to Duration of Labour | | |
| | Frequency | Percentage |
| 2.5 – 3 kg | 6 | 6% |
| 3.1 – 3.5 kg | 7 | 7% |
| 3.6 – 4 kg | 62 | 62% |
| 4.1 – 4.5 kg | 25 | 25% |
| Total | 100 | 100% |

Among women with co morbidities, the frequency of genital tract injuries in preeclampsia is 10%. The frequency of genital tract injuries in GDM is 2%. The maximum number of genital tract injuries occurred in women with a

normal duration of labour (78%). 62% of cases have a birth weight of 3.6-4 kg. 6% of cases have a birth weight of 2.5-3 kg.

Table 2: Distribution of Cases According to Lower Genital Tract Injuries

| | Frequency | Percentage |
|---|------------|-------------|
| Spontaneous | 60 | 60% |
| Outlet Forceps | 40 | 40% |
| Total | 100 | 100% |
| Distribution of Cases According to Mode of Vaginal Delivery | | |
| | Frequency | Percentage |
| 1 st Degree Perineal Tear | 25 | 25% |
| 2 nd Degree Perineal Tear | 44 | 44% |
| 3 rd Degree Perineal Tear | 1 | 1% |
| Vaginal Laceration | 15 | 15% |
| Periurethral Tear | 10 | 10% |
| Vulval Hematoma | 3 | 3% |
| Cervical Lacerations | 2 | 2% |
| Total | 100 | 100% |

60% of cases of genital tract injuries occurred during spontaneous delivery. 40% of cases of genital tract injuries occurred during outlet forceps delivery. 44% of cases were 2nd degree perineal tears. 2% of cases were cervical lacerations. 1% of cases were 3rd degree perineal tears.

Table 3: Distribution of Cases According to Maternal Complications

| | Frequency | Percentage |
|------------------|-----------|------------|
| Anaemia | 30 | 30% |
| Wound Gaping | 14 | 14% |
| Wound Resuturing | 9 | 9% |
| Severe Pain | 8 | 8% |

30% cases of genital tract injuries were complicated with anemia. 14% of cases had wound gaping, out of which 9% cases required wound resuturing. 8% of cases had severe pain.

Table 4: Distribution of Cases According to Injuries in Women having RMLE

| | CRI | | PG | | Assistant | |
|--|-----------|-------|--------------|-------|-----------|-------|
| | N | % | N | % | N | % |
| 1 st Degree Perineal Tear | 5 | 27.8% | 20 | 29.9% | 0 | 0.0% |
| 2 nd Degree Perineal Tear | 9 | 50.0% | 25 | 37.3% | 10 | 66.7% |
| 3 rd Degree Perineal Tear | 0 | 0.0% | 1 | 1.5% | 0 | 0.0% |
| Vaginal Laceration | 2 | 11.1% | 13 | 19.4% | 0 | 0.0% |
| Periurethral Tear | 2 | 11.1% | 5 | 7.5% | 3 | 20.0% |
| Vulval Hematoma | 0 | 0.0% | 1 | 1.5% | 2 | 13.3% |
| Cervical Lacerations | 0 | 0.0% | 2 | 3.0% | 0 | 0.0% |
| Distribution of Cases According to Incidence and Nature of Injury in Relation to Expertise of Parturient | | | | | | |
| | With RMLE | | Without RMLE | | Total | % |
| | N | % | N | % | N | % |
| 1 st Degree Perineal Tear | 20 | 23.0% | 5 | 38.5% | 25 | 25.0% |
| 2 nd Degree Perineal Tear | 40 | 46.0% | 4 | 30.8% | 44 | 44.0% |
| 3 rd Degree Perineal Tear | 0 | 0.0% | 1 | 1.1% | 1 | 1.0% |
| Vaginal Laceration | 13 | 14.9% | 2 | 15.4% | 15 | 15.0% |
| Periurethral Tear | 8 | 9.2% | 2 | 15.4% | 10 | 10.0% |
| Vulval Hematoma | 3 | 3.4% | 0 | 0.0% | 3 | 3.0% |
| Cervical Lacerations | 2 | 2.3% | 0 | 0.0% | 2 | 2.0% |

50% cases of 2nd degree perineal tears occurred in deliveries conducted by CRI's. 37.3% cases of 2nd degree perineal tears occurred in deliveries conducted by postgraduates. 66.7% cases of 2nd degree perineal tears occurred in deliveries conducted by assistant professors. 46% of 2nd degree perineal tears occurred in women with RMLE. 30.8% of cases occurred in women without RMLE.

Table 5: Distribution of Cases According to Lower Genital Tract Injuries

| | Frequency | Percentage |
|---|------------|-------------|
| Spontaneous | 60 | 60% |
| Outlet Forceps | 40 | 40% |
| Total | 100 | 100% |
| Distribution of Cases According to Mode of Vaginal Delivery | | |
| | Frequency | Percentage |
| 1 st Degree Perineal Tear | 25 | 25% |
| 2 nd Degree Perineal Tear | 44 | 44% |
| 3 rd Degree Perineal Tear | 1 | 1% |
| Vaginal Laceration | 15 | 15% |
| Periurethral Tear | 10 | 10% |
| Vulval Hematoma | 3 | 3% |
| Cervical Lacerations | 2 | 2% |
| Total | 100 | 100% |

Table 6: Distribution of Cases According to Relation of Birth weight to Type of Perineal Injury

| | 2.5 Kg to 3 Kg | | 3.1 - 3.5 Kg | | 3.6 – 4 Kg | | 4.1 - 4.5 Kg | |
|--------------------------------------|----------------|-------|--------------|-------|------------|-------|--------------|-------|
| | N | % | N | % | N | % | N | % |
| 1 st Degree Perineal Tear | 1 | 14.3% | 3 | 42.9% | 13 | 20.3% | 8 | 33.3% |
| 2 nd Degree Perineal Tear | 3 | 42.9% | 2 | 28.6% | 32 | 50.0% | 7 | 29.2% |
| 3 rd Degree Perineal Tear | 0 | 0.0% | 1 | 14.3% | 0 | 0.0% | 0 | 0.0% |
| Vaginal Laceration | 0 | 0.0% | 1 | 14.3% | 13 | 20.3% | 1 | 4.2% |
| Periurethral Tear | 1 | 14.3% | 0 | 0.0% | 4 | 6.3% | 5 | 20.8% |
| Vulval Hematoma | 0 | 0.0% | 0 | 0.0% | 2 | 3.1% | 1 | 4.2% |
| Cervical Lacerations | 0 | 0.0% | 0 | 0.0% | 0 | 0.0% | 2 | 8.3% |

50% of 2nd degree perineal tears occurred in babies with birth weights of 3.6-4 kg. 42.9% of 1st degree perineal tears and 2nd degree perineal tears occurred at birth weights of 3.1-3.5 kg and 2.5-3 kg respectively. 33.3% of 1st degree perineal tears occurred at birth weights of 4.1-4.5 kg.

Discussion

Genital tract injuries following vaginal delivery are common and a frequent complication of vaginal delivery. A perineal tear is the most common injury complicating childbirth. The high frequency of genital tract trauma and its consequences result in damaging child birth experience, delay in the initiation of breast feeding, adverse effects on the health of mothers and proper delivery technique and vigilant monitoring help a lot in reducing obstetric trauma.[10]

Though episiotomy is a deliberate incision on the female genital tract with an intent to expedite delivery, it is widely regarded as genital trauma.[11] Because it cuts through muscles, blood vessels, and nerves with resultant complications such as haemorrhage, injury to anal sphincter and Bartholdi's gland.

The most predominant lower genital tract injury in our study was a second degree perineal tear correlating with a study in Zaria, Nigeria.[12] My study reported three cases of vulval hematoma around 2cm in width at episiotomy site at muscle

level. Of which one was delivered by outlet forceps and the remaining two in normal vaginal delivery, all evacuated under local anaesthesia. Wound healing was also good.

Out of 25 first degree perineal tears in our study only 10 required suturing. Other common lower genital tract injuries in this study are 1st degree perineal tears, and paraurethral tears. Perineal injuries following vaginal birth were found to be related to age and parity. The high rate of injuries within the age group of 19 to 24 years, as it is the peak age of child bearing. In this study, the majority of 2nd para had genital tract injuries.

A hospital study in America on the first vaginal delivery documented that the probability of a subsequent perineal tear was highest among individuals who had undergone an episiotomy or perineal tear in the first vaginal birth in comparison with those with an intact perineum.

A recent systematic review shows that women receiving mediolateral episiotomy are less likely to suffer from a severe birth related perineal trauma (Verghese et al. 2016).

In addition, Chang et al.,[13] Baghurst et al.[14] stated that having a perineal injury during the first delivery increases the probability of having a spontaneous perineal injury during the second delivery.

The high rate of perineal injuries among women having their second vaginal birth is attributed to unexplainable fright sustained after their first vaginal birth. Bick D et al.[15] stated that women who had experienced perineal injuries during their first delivery were more than three times more likely to sustain perineal injuries at the birth of their second baby. In our study, none of the cases reported perineal trauma in previous deliveries. In addition, Chang et al., Baghurst et al. stated that having a perineal injury during the first delivery increases the probability of having a spontaneous perineal injury during second delivery.

In our study, women already having previous RMLE sustained more perineal injuries. It is quite anticipated that perineal scar from the previous perineal injury might decrease the strength of the pelvic floor muscles and make them more rigid. Regarding perineal conditions, women with rigid and thick perineum were notably less likely to have intact perineum in contrast to those who had soft and thin perineum.

Lower genital tract injuries in this study are high among neonatal birth weight ranges of 3.6 to 4 kg, which is around 50%. The mode of delivery revealed that lower genital tract injuries are most common among women with instrumental deliveries. A reduction in instrumental deliveries may be clinically significant in reducing the incidence of subsequent post-delivery pain. One complete perineal tear occurred in this study. The case which is a second gravida, came in active labour and delivered a 3.5 kg baby, which was a precipitate labour. Anal sphincter repair and perineal repair were done under spinal anesthesia. The mother and baby outcome was good.

Goldman et al.[16] study which examined perineal injury rates, reported that educational level and occupation play a role in decreasing perineal injury. The researcher states that perineal injuries are commonly seen in non-working women due to their desk bound life style and absence of activities in nonworking mothers. Women with a short birth interval and those who have had previous episiotomies or injuries significantly more likely to experience perineal trauma. This finding is supported by Lowenstein et al.[17] who stated that the shorter the birth interval, the greater the chance of perineal tears. Hodnett et al.[18] who emphasized that there is good evidence that women who had continuous one-to-one support throughout their labour have better outcomes in terms of decreased analgesia requirements, reduced frequency of operative delivery and perineal trauma.

In the same context, Cunningham et al.[19] states that every attempt should be made to make sure that all labouring women receive psychological support, not only from those close to them but also from

experienced caregivers. In my study, during labour, a birth companion of their choice was present in all cases.

Research has revealed that maternal anxiety for the duration of child birth will be decreased, when women in labour have a better sense of control, which finally leads to a more positive birth experience.

Birth companions help women feel in control during labour, whereas, for women who are alone, labour is a long and exhausting effort, full of uncertainties. It is recommended by the WHO that a parturient woman can be allowed to have a birth companion she trusts and with whom she feels at comfort.

According to Zaitoun[20] the gradual extension of the head is aided by giving upward pressure on the perineum by one hand and downward pressure on the occiput by the fingers of the other hand to control the movement of extension and prevent perineal trauma (Ritgen's maneuver). Also allowing the head to extend only between uterine contractions while the woman is panting during her delivery will prevent perineal trauma.

The number of tears decreased with the expertise of care given. However, in our study, the increased number of perineal tears in the deliveries conducted by postgraduates can be explained on the basis that the maximum number of deliveries are being conducted by postgraduates.

Conclusion

Skilled birth attendants in labour, vigilant labour monitoring, identifying risk factors such as perineal injuries in previous deliveries, a big baby, a timely episiotomy, a proper Ritgen's manoeuvre, timely and adequate suturing, the allocation of medical personnel depending on risk factors, the provision of emergency obstetric care services that are accessible and affordable, and perineal care in the postnatal period help a lot in reducing the rate of genital tract injuries and complications.

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