

## Original Research

# Clinical and Ultrasonographic Evaluation of the Pelvic Floor in Primiparous Women after Normal Vaginal Delivery with Episiotomy and without Episiotomy

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## ABSTRACT

### Objective

The aim of this prospective study is clinical and ultrasonographic evaluation of the pelvic floor in primiparous women after normal vaginal delivery with episiotomy and without episiotomy.

### Methods

This is a cross-section study of primiparous women with a history of delivery at Tanta University Hospital from August 2018 to August 2019. The sample power was calculated based on avulsion (major and minor) in two groups (vaginal delivery with episiotomy and without episiotomy) of total forty-primiparous women with an interval after delivery (20 cases after normal vaginal delivery with episiotomy and 20 cases after normal vaginal delivery without episiotomy).

### Results

Twenty-four hours of delivery there was a highly significant difference between group A (with episiotomy) and group B (without episiotomy) regarding to ultrasound abnormalities, degree of tear, blood loss, hemoglobin concentration and clinical findings, while no difference regarding levator ani weakness. Two months later from delivery there was no significant difference between group A and group B regarding to ultrasound abnormalities and levator ani weakness while there was a difference between the two groups in regarding with clinical findings.

### Conclusion

Normal vaginal delivery without episiotomy in primiparous women is better than normal vaginal delivery with episiotomy as there is no perineal tenderness, no dyspareunia. Low incidence of urinary, rectal incontinence, tear and perineal infection.

### Keywords

Clinical and ultrasonography; Primiparous; Normal vaginal delivery; Episiotomy.

## INTRODUCTION

Pelvic floor dysfunction (PFD) is a disorder that includes pelvic organ prolapse (POP), urinary incontinence (UI), fecal incontinence (FI), and overactive bladder (OAB) syndrome. The prevalence of these conditions increases with age but, generally, PFD affects 20-50% of women throughout their whole lives.<sup>1</sup> Thus, PFD is common and has significant societal impact.<sup>2</sup> Another important PFD risk factor is childbearing. Vaginal delivery has been

considered the main contributing factor because of damage to pelvic floor muscle, fascia, and nerves.<sup>3</sup>

However, benefits of episiotomy include preventing advanced (3<sup>rd</sup> and 4<sup>th</sup> degree) perineal tears by using lateral or medio-lateral incision types, easier suturing, decreased postpartum pelvic organ injury, cumulative evidence over recent decades strongly indicate the lack of episiotomy efficiency.<sup>4</sup>

Third stage of labor starts by expulsion of baby and ends by expulsion of placenta. It's duration about 20-minutes. Delivery of placenta by conservative method (after delivery of baby, ulnar border of the left hand on funds and wait for signs of placental separation which are, uterus start to contract, suprapubic bulge, elongation of the cord, gush of blood, massage the uterus and ask the woman to strain maximally during contractions to deliver the placenta. When placenta deliver hold it and roll it till deliver membrane complete inspection for any missing parts give methergin, oxytocin and massage to prevent postpartum hemorrhage).<sup>4</sup>

In 2009, cochrane collaboration meta-analysis of randomized controlled trials demonstrated that compared with routine episiotomy use, selective episiotomy significantly decreases the risk of advanced perineal tears [relative risk (RR) 0.67] and overall need for perineal suturing (RR 0.71).<sup>5</sup> Later no solid evidence for performing episiotomy in classical indications of vacuum extraction or for preventing shoulder dystocia.

The decision to perform episiotomy for preventing advanced tear is mostly based on previous experience of the attending obstetrician, such as characteristic perineal parameters, with lack of any scientific evidence supporting this management.

In accordance with cochrane collaboration meta-analysis, we hypothesized that avoiding episiotomy, compared with selective episiotomy use, may be related to decreased risk of advanced perineal tears, with no notable effect on other obstetric complications.<sup>6</sup>

Pelvic denervation may also contribute to levator ani inefficiency, which would diminish urethral support and consequently induce UI with or without pelvic organ prolapsed.<sup>7</sup>

Transperineal ultrasound is used as a tool to evaluate patients with PFD. It is a simple and accessible method, radiation-free, minimally invasive, cost-effective and has the benefit of providing a real-time and dynamic appraisal of the pelvic floor.<sup>8</sup>

Several studies have addressed the impact of delivery on pelvic floor function.

Common methodologic flaws in these studies include use of non-standardized outcomes, reliance on raw national data registries, relatively short follow-up, and conclusions based on small samples that might not address potential confounding factors.<sup>9</sup>

## MATERIALS AND METHODS

This is a cross-section study of primiparous women with a history of delivery at Tanta University Hospital, Tanta, Gharbia, Egypt from August 2018 to August 2019. The cases were divided in two groups (vaginal delivery with episiotomy and without episiotomy) based on avulsion (major and minor) forty-primiparous women with an interval after delivery 20 cases after normal vaginal delivery with episiotomy and 20 cases after normal vaginal delivery without episiotomy.

An informed consent was obtained from all participants in this research. Any unexpected risks appeared during the course of the research was cleared to all participants and the ethical committee on time.

### Inclusion Criteria

1. Primiparous women undergo normal vaginal delivery with episiotomy and primiparous women without episiotomy.
2. Average fetal weight. (2.5-3.5 kg)
3. Average gestational age. (38-40 weeks)
4. Normal liquor.

### Exclusion Criteria

1. Women with neurologic or muscular conditions and those with previous pelvic surgery were excluded.
2. Intra uterine growth restriction.
3. Macrosomic baby.
4. Oligohydrominos.
5. Premature rupture of membrane.
6. Fetal distress.
7. Twins.

All patients were subjected to the following assessment:

1. Full history taking
2. Clinicalevaluation:
  - Physical examination of pelvic floor muscle.
  - Digital palpation to assess the strength of levator ani muscle.
  - Transperineal US for evaluation of levator ani muscle after labor.
  - Evaluation the women 24-hours after the delivery using yes or no questions regarding symptoms of urinary/anal incontinence, perineal complications.
  - Evaluation the women 2-months after delivery by using questionnaires: the Pelvic Organ Prolapse/Urinary Incontinence Sexual Function Questionnaire and the Pelvic Floor Distress.
  - Patients were followed-up post-delivery 1-year.

## RESULTS

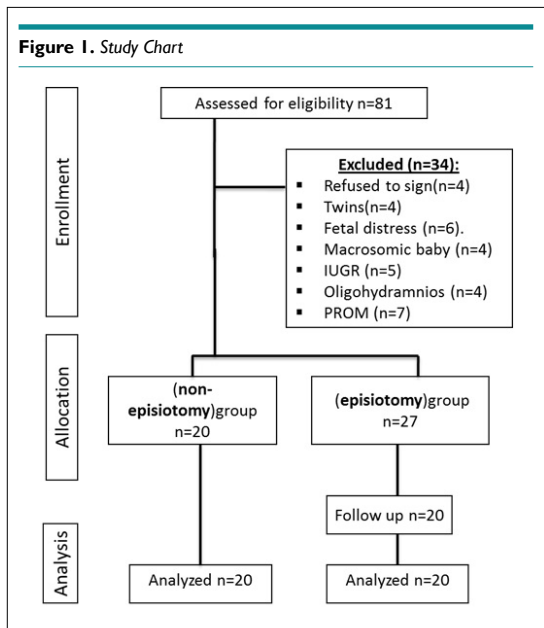
Eighty-one primiparous females were assessed for eligibility to participate in this study. Thirty-four ones were excluded. The remaining 47 patients were allocated into two groups; (non-episiotomy group, n=20) and the other converted to (episiotomy group, n=27). Then only 20 participants in both groups were followed-up and analyzed (Figure 1).

Pre-delivery haemoglobin was not significantly differ between the two groups 11.84±1.63 in Group A *vs* 11.49±1.39 in Group B with *p*-value 0.47.

### Duration of the Third Stage Labor

Duration of the third stage labor was not significantly differ be-

tween the two groups  $30.4 \pm 3.4$  in Group A *vs*  $30.1 \pm 4.0$  in Group B with *p*-value 0.56.



#### After 24-hours from Delivery

1. A highly significant difference between Group A (with episiotomy) and Group B (without episiotomy) regarding to US abnormalities and degree of tear with *p*-value 0.030 and 0.000 respectively.
2. A highly significant difference between Group A and Group B regarding to the amount of blood loss with *p*-value <0.001 and a significant difference between the two groups  $10.96 \pm 1.05$  in Group A *vs*  $11.18 \pm 1.11$  in Group B as regard post-delivery haemoglobin concentration with *p*-value 0.042.
3. As regard to clinical findings a significant difference in between the two groups with *p*=0.022 but regarding to levator ani weakness there was no difference in between the two groups with *p*=0.634.

#### After 2-month from Delivery

1. There is no significant difference between Group A and Group B regarding to US abnormalities with *p*-value (0.817).
2. As regard to clinical findings there was a significant difference in between the two groups with *p*=0.042 but regarding to levator ani weakness there was no difference in between the two groups with *p*=0.634.

## DISCUSSION

In the present study, the mean body mass index (BMI) was  $27.05 \pm 3.32$  kg/m<sup>2</sup> which agrees with the study deserved by Júnior et al<sup>10</sup> who found the mean BMI was  $27.3 \pm 4.5$  kg/m<sup>2</sup>. As regard to maternal age, the mean maternal age was  $24.60 \pm 4.17$ -years which agrees with the study done by Júnior et al<sup>10</sup> who found the mean maternal age was  $24.5 \pm 6.3$ -years. Araujo et al<sup>11</sup> also stated that the

mean maternal age was  $29.8 \pm 5.9$ -years. In our study the mean gestational age was  $38.60 \pm 2.74$ -weeks which agrees with Júnior et al<sup>10</sup> where the mean gestational age was  $38.9 \pm 1.3$  weeks. In the present study, there is a highly significant difference between two groups as regard gestational age with *p*-value 0.043 which disagrees with the study done by Araujo et al<sup>11</sup> where no difference between the two groups regarding to maternal age with *p*=0.93. Regarding to degree of tear, in the Group A there was no tear in 16 cases, 1<sup>st</sup> degree tear in 2 cases, one case had 2<sup>nd</sup> degree tear and one case had 3<sup>rd</sup> degree tear. In the Group B there was no tear in 18 cases, 1<sup>st</sup> degree tear in 2 cases with a high statistical significance difference in between the two groups. Javed et al<sup>12</sup> study results demonstrated that 36.6% of their study group had intact perineum, 36% had first degree perineal tears and 27.3% had second degree perineal tears which was significant in their study with *p*-value 0.001. Regarding to duration of third stage of labor, both Group A and Group B, there was no difference in duration (20-minutes each).

Also the study of Shahraki et al<sup>13</sup> stated that 35% of their study group had intact perineum, 45% had first degree perineal tears, 75% had second degree perineal tears, 15% had third degree perineal tears and 10% had fourth degree perineal tears which was significant in their study with *p*-value <0.05.

The study also had been done by Rodriguez et al<sup>14</sup> reported that 22(9.9%) women in their control group developed third degree perineal tears compared to 10(4.5%) of women in study group with *p*-value <0.001 but there was no significant difference between the frequency of fourth degree perineal tears which was 4.5% and 2.3% in the control *vs* study groups.

Aqmarek al<sup>15</sup> in their study the control group with episiotomy associated with higher frequency of third degree perineal tears (3.7% *vs* 1.1%), and their groups had no fourth degree perineal tears.

Parveen et al<sup>16</sup> study also showed that there were reduction of first degree perineal tears in control group as compared to study group (20 to 60%) with *p*-value 0.001 but second degree tear was seen significantly higher in control group as compared to study group (74 *vs* 44%) with *p*-value 0.002, while third degree tear was seen in (6%) in control group *vs* (0%) in his study group with *p*-value 0.079 that statistically significant.

Levator ani muscle avulsion is defined as the separation of the puborectal/pubococcygeus muscle complex from the tendinous arch of the levator ani muscle and is the most common form of levator trauma study by Dietz et al.<sup>17</sup> Avulsion may be a causative or aggravating factor for stress urinary incontinence (SUI) and is an indicator of trauma to the perineal support system, commonly associated with venereal diseases (VD).<sup>11</sup>

In our study, there was no difference in between the two groups with *p*=0.634 regarding to levator ani weakness which agrees with the study done by Araujo et al<sup>11</sup> where US evaluation identified no differences in levator ani thickness *p*=0.35-0.44, or presence of major or minor levator ani avulsion *p*=0.10.

In the present study, there is no significant difference between Group A and Group B as regard neonatal intensive care unit (NICU) admission and fetal trauma with value (1.000) and (0.866) respectively. This is in agreement with Coutada et al<sup>18</sup> in which NICU admission, fetal trauma were not statistically different in their study and their control groups with  $p$ -value 0.99, 0.470 respectively.

It also matched with Aqmar et al<sup>15</sup> study results showed that there was no significant difference between both groups according to NICU admission with  $p$ -value 0.07.

The present study matched with Melo et al<sup>19</sup> results showed that there were no significant different in NICU admission between both groups with  $p$ -value > 0.999.

There is a highly significant difference between Group A and Group B regarding to the amount of blood loss with  $p$ -value < 0.001 and a significant difference between them as regard haemoglobin concentration with  $p$ -value 0.042.

In the present study the mean blood loss in Group A (with episiotomy) was (397.55 ± 126.42 ml) and in Group B (without episiotomy) was (623.00 ± 190 ml). This is in agreement with Thamaraveni<sup>20</sup> study showed that the mean blood loss was (250 ± 100 ml). In his study group and in the control group it was (200 ± 50 ml). Which proof the fact that there is more blood loss in episiotomy as compared to normal deliveries.

While in the study had been done by Apurva et al<sup>21</sup> disagree with our result as showed that the mean blood loss in their study group was (291.8 ± 172.3 ml) and (341.9 ± 192.7 ml) in their control group. However, the difference between the two groups was statistically not significant in their study.

In addition to Melo et al<sup>19</sup> study showed there was also no statically difference in the mean blood loss between the study and control groups (257 ml vs 244 ml, respectively).

In the present study, there was a significant difference in between the two groups with  $p$ =0.022 regarding to clinical findings (Uterine prolapse, urinary incontinent, rectal incontinent, tender perineal scar, perineal pain) which agrees with the study done by Araujo et al<sup>11</sup> who stated that no significant difference among groups was observed regarding UI after delivery  $p$ =0.39 loss of muscle strength referred by the patient  $p$ =0.48, or evaluated through digital examination  $p$ =0.87.

One meta-analysis demonstrated a two fold increase in the risk of developing long-term SUI, comparing VD with colposuspension (CS).<sup>22</sup>

## CONCLUSION

Normal vaginal delivery without episiotomy in primiparous women is better than normal vaginal delivery with episiotomy as there is no perineal tenderness, no dyparunia. Low incidence of urinary,

rectal incontinence, tear and perineal infection.

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## DISCLOSURE

There is no financial or non-financial relationship to disclose.

## CONFLICTS OF INTEREST

The authors declare that they have no conflicts of interest.

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