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Comparative Evaluation of Maternal and Neonatal Outcomes: Selective Episiotomy vs. Non-Episiotomy Protocol in Normal Labour Management

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ABSTRACT
Background: *Episiotomy, a surgical incision of the perineum during vaginal delivery, has traditionally been used to prevent severe perineal trauma. This study aimed to compare maternal and neonatal outcomes between selective episiotomy and non-episiotomy protocols during normal vaginal delivery.*
Methods: *The quasi-experimental study was conducted in the Department of Obstetrics and Gynaecology at Sher-E-Bangla Medical College Hospital, Barishal, from September 2022 to August 2023. 100 women in active labour meeting inclusion criteria were enrolled and allocated into two groups: selective episiotomy (Group A, n=50) and non-episiotomy (Group B, n=50). Maternal outcomes included duration of the second stage of labour, adverse maternal events, postpartum blood loss, perineal pain, and maternal satisfaction. Neonatal outcomes included 1st and 5th minute Apgar scores and need for resuscitation. Data were analysed using SPSS version 23, with $p < 0.05$ considered statistically significant.*
Results: *Mean maternal age was 26.9 ± 8.3 years in Group A and 25.4 ± 7.8 years in Group B (p=0.508). Mean gestational age was 37.3 ± 0.8 weeks in Group A and 38.1 ± 0.5 weeks in Group B (p=0.523). Duration of the second stage was longer in Group A (32.1 ± 4.5 min) compared to Group B (29.8 ± 3.7 min, p=0.006). Adverse maternal outcomes were higher in Group A but not statistically significant. Mean postpartum blood loss was 285.3 ± 36.7 ml in Group A and 268.9 ± 48.2 ml in Group B (p=0.058). Neonatal outcomes were comparable (p>0.05). Perineal pain was significantly higher in Group B (36% vs 14%, p=0.011), and maternal satisfaction was higher in Group A (100% vs 88%, p=0.011).*
Conclusion: *Selective episiotomy is associated with slightly longer second stage of labour but improved maternal satisfaction and lower perineal pain, without affecting neonatal outcomes. These results support selective episiotomy as a safe and effective practice for normal vaginal deliveries.*
Keywords: *Episiotomy, Selective Episiotomy, Perineal Pain, Maternal Satisfaction*

I. INTRODUCTION

The female perineum is a fibromuscular area between the vaginal and anal openings. In vaginal delivery, the female perineum is stretched to permit the passage of the baby. However, this may lead to tears, and an episiotomy, which is a surgical procedure that involves cutting the vaginal opening, is performed. Initially, the procedure was carried out to prevent extensive damage to the perineum. However, the procedure affects the tissue and may lead to pain, delayed healing, and discomfort [1]. Globally, the approach has moved from routine to selective episiotomy, based on the increase in evidence supporting restrictive policies. The World Health Organisation advocates for selective rather than routine episiotomy as a form of quality intrapartum care [2]. However, there is a wide variation in the practice of episiotomy across different regions of the world. A study done across multiple countries showed a wide variation in episiotomy, ranging from less than 10% to more than 70%, with a general increase in the proportion of episiotomies in low- and middle-income countries compared to high-income countries [3]. In South Asia, institutional studies have shown a high prevalence of episiotomy, especially among primiparous women [4,5]. The variation is due to differences in practice and guideline implementation. In Bangladesh, national survey results showed an increase in institutional deliveries, with more than half of the births occurring in health facilities [5]. However, evidence shows that routine episiotomy is not beneficial in reducing serious trauma to the perineum and may actually cause an increase in maternal morbidity [6]. A systematic review done by the Cochrane group showed that restrictive episiotomy policies result in a reduction of one-third of posterior perineal trauma and suturing/healing problems without any adverse effects on

neonatal outcomes [7]. Other research has shown an increase in postpartum pain, bleeding, and infections due to routine episiotomy, while selective episiotomy is associated with improved recovery of mothers [8]. This variation in practice may be due to fear of obstetric anal sphincter injury, training of care providers, and lack of standard protocols, especially in resource-constrained settings. According to international recommendations, episiotomy should be done only when medically indicated to reduce complications in mothers and enhance the quality of care [9]. There has been improvement in skilled birth attendant care, and as a result, there is a focus on evidence-based labour management; however, comparative evidence within the context of selective versus non-episiotomy practices has been limited, especially in South Asia [4, 10]. In comparison with earlier retrospective or heterogeneous-population studies, this analysis compares selective episiotomy and non-episiotomy protocols in the management of normal labour and evaluates maternal and neonatal outcomes. This approach provides evidence that can be used locally to improve obstetric practice [11-13]. Therefore, this study aims to compare maternal and neonatal outcomes between selective episiotomy and non-episiotomy protocols in the management of normal labour.

II. METHODS

This quasi-experimental study was conducted in the Department of Obstetrics and Gynaecology at Sher-E-Bangla Medical College Hospital, Barisal, Bangladesh from September 2022 to August 2023. The study included 100 women in active labour who fulfilled the inclusion criteria. Inclusion criteria were women with term pregnancy (≥37 completed weeks), cervical dilation up to 8 cm at admission, live singleton fetus in cephalic vertex presentation, and planned normal vaginal delivery without immediate indication for caesarean section. Women with pregnancy-related bleeding disorders, requirement for emergency operative delivery, or inability to provide written informed consent were excluded. The sample size was calculated using the standard proportion formula. Although the calculated sample size was 138, 100 participants were enrolled due to study duration and feasibility, with 50 participants allocated to each group using purposive sampling. Participants were divided into two groups: the non-episiotomy group, where episiotomy was avoided unless clinically unavoidable, and the selective episiotomy group, where episiotomy was performed based on clinical judgement in situations such as imminent severe perineal rupture, instrumental delivery, shoulder dystocia, prolonged second stage of labour, or non-reassuring fetal heart rate. Maternal and neonatal outcomes were recorded using a structured case record form. Data were analysed using SPSS version 23, and a p-value <0.05 was considered statistically significant. Ethical approval was obtained from the institutional ethical committee.

III. RESULTS

Table 1 shows the age distribution of the study patients, ranging from 18 to 35 years. It was observed that the majority of patients (23 in group A and 22 in group B) belonged to the age group 24-29 years. The mean age was found to be 26.9±8.3 years in Group-A and 25.4±7.8 years in Group-B.

Table 1: Age distribution of the study patients (n = 100)

Age (Years)	**Group A (n = 50)**		**Group B (n = 50)**		**P value**
	No.	%	No.	%	
18–23	14	28.0	17	34.0	**0.508**
24–29	23	46.0	22	44.0	
30–35	13	26.0	11	22.0	
Total / Mean ± SD	50	100	50	100	
Mean ± SD (Years)	**26.9 ± 8.3**		**25.4 ± 7.8**		

Table 2 shows that the mean period of gestation was 37.3+0.8 weeks and 38.1+0.5 weeks in group A and group B, respectively. The difference was not statistically significant (p>0.05) between the two groups.

Table 2: Period of gestation of the patients (n=100)

Gestation (Weeks)	**Group A (n = 50)**		**Group B (n = 50)**		**P value**
	No.	%	No.	%	
<37	0	0	0	0	**0.523**
37–38	42	84.0	36	72.0	
38–39	8	16.0	9	18.0	
40–41	0	0	5	10.0	

Mean ± SD	**37.3 ± 0.8**	**38.1 ± 0.5**	

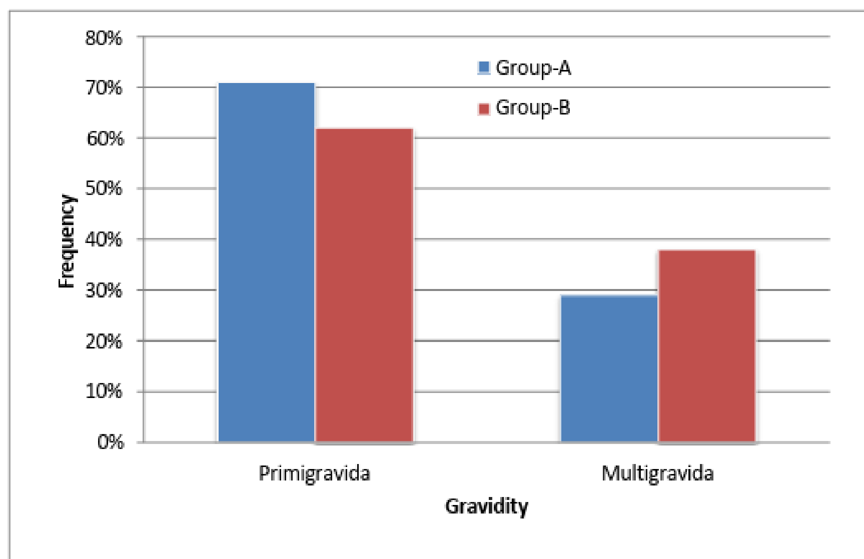

Figure 1: Obstetrical history of women (n=100)

Figure 1 shows the obstetric history. Most of the women in the study were primigravida (66.5%). Multi-gravida (two or more gravida) was seen in (33.5%) of mothers. The p- value is 0.137. The result is not significant at p ≥ .05.

Table 3 shows the duration of the 2nd stage of labour. Values are expressed as Mean±SD and percentage (%) over the column in total. Duration was prolonged in group-A (32.1 ± 4.5 min) than in group B (29.8 ± 3.7 min). The difference was statistically significant.

Table 3: Evaluation of Duration of 2nd Stage of Labour (n = 100)

Duration of the 2nd Stage	**Group A (n = 50)**		**Group B (n = 50)**		**P value**
	No.	%	No.	%	
> 1 hour	7	14.0	4	8.0	**0.006**
≤ 1 hour	43	86.0	46	92.0	
Mean ± SD (min)	**32.1 ± 4.5**		**29.8 ± 3.7**		

Table 4 represents adverse maternal outcomes. On comparison between groups, present study demonstrated that spontaneous laceration, perineal trauma & need for instrumental delivery was higher in group-A (20.0%, 6.0% & 14.0% respectively) than Group-B (8.0%, 0% & 4.0% respectively). But differences were statistically non- significant in between groups.

Table 4: Comparison of Adverse Outcomes (n = 100)

Adverse Outcome	**Group A (n = 50)**		**Group B (n = 50)**		**P value**
	No.	%	No.	%	
Spontaneous laceration	10	20.0	4	8.0	0.085
Perineal trauma	3	6.0	0	0	0.081
Need for instrumental delivery	7	14.0	2	4.0	0.092

Table 5 shows the postpartum blood loss at delivery. Blood loss >500 ml was observed in 14.0% of Group A and 8.0% of Group B. The mean blood loss was higher in Group A (285.3 ± 36.7 ml) compared to

Group B (268.9 ± 48.2 ml). However, the difference between the two groups was not statistically significant (p = 0.058).

Table 5: Assessment of Postpartum Blood Loss at Delivery (n = 100)

Postpartum Blood Loss	**Group A (n = 50)**		**Group B (n = 50)**		**P value**
	No.	%	No.	%	**0.058**
> 500 ml	7	14.0	4	8.0	
≤ 500 ml	43	86.0	46	92.0	
Mean ± SD (ml)	**285.3 ± 36.7**		**268.9 ± 48.2**		

Table 6 shows the neonatal outcomes of the respondents. The 1st and 5th minute Apgar scores were comparable between the two groups. Neonatal resuscitation was required in 4.0% of Group A and 6.0% of Group B. No statistically significant difference was found between the groups (p > 0.05).

Table 6: Neonatal Outcome of the Respondents (n = 100)

Neonatal Outcome	**Group A (n = 50)**		**Group B (n = 50)**		**P value**
	No.	%	No.	%	
1st Minute Apgar Score					1
< 7	4	8	4	8	
≥ 7	46	92	46	92	
5th Minute Apgar Score					1
< 7	0	0	0	0	
≥ 7	50	100	50	100	
Neonatal Resuscitation					0.648
Yes	2	4	3	6	
No	48	96	47	94	

Table 7 presents the post-partum outcome of the women. Wound infection rate was 6.0% in Group-B. Perineal pain after childbirth was higher in Group-B (14.0% in group-A & 36.0% in Group-B). The result was statistically significant between groups. Similarly, maternal satisfaction was better in group-A (100% in group-A & 88.0% in Group-B). The result was statistically significant between groups.

Table 7: Postpartum Outcomes of the Women (n = 100)

Post-partum Outcome	**Group A (n = 50)**		**Group B (n = 50)**		**P value**
	No.	%	No.	%	
Wound Infection					0.081
Yes	0	0	3	6	
No	50	100	47	94	
Perineal Pain After Childbirth					0.011
Yes	7	14	18	36	
No	43	86	32	64	
Maternal Satisfaction					0.011
Satisfied	50	100	44	88	
Dissatisfied	0	0	6	12	

IV. DISCUSSION

In this study, comprising 100 women, the demographic, obstetric, and maternal and neonatal outcomes were compared between Group A and Group B. It was observed that the average age of the women in both groups was more or less the same, with the women in Group A having an average age of 26.9 ± 8.3 years and the women in Group B having an average age of 25.4 ± 7.8 years. Most of the women in the present study belonged to the 24 to 29-year age group. However, there was no significant difference between the ages of the women in the two groups, i.e., p = 0.508. This is because, in the obstetric population, the majority of the parturients usually belong to the middle reproductive age group, and age is not a predictor of poor outcomes when controlled for other variables [14,15]. Group A presented a mean gestational period of 37.3 ± 0.8 weeks and Group B, of 38.1 ± 0.5 weeks, with no statistical difference between the two groups (p = 0.523). Most of the gestational periods in both groups were 37–38 weeks and 38–39 weeks, which belong to the normal gestational stage. These observations on gestational periods have also been noticed in other studies, which reported that the gestation is often term at delivery among low-risk patients [16]. The obstetrical history of the women revealed that 66.5% were primigravida and 33.5% multigravida with no statistically significant difference (p = 0.137). This is not unexpected in view of the analyses, as first-time mothers represent a large proportion of the study population [17]. Although primigravida status may have an effect on the progression of labour, this study found no significant differences in most outcomes as a function of gravidity alone. Second stage of labour evaluation revealed a meaningful difference in time between Group A (32.1 ± 4.5 min) & Group B (29.8 ± 3.7 min) (p = 0,006). Although prolonged second stages of labour (not defined as prolonged labour) are associated with adverse maternal morbidity outcomes, including perineal trauma and haemorrhage [18, 19]. It has been documented that longer second stages of labour have been associated with complications, though this depends on parity and clinical practice standards [20,21]. Adverse maternal outcomes such as spontaneous laceration, perineal trauma, and instrumental delivery were also higher in Group A than in Group B, but this difference was not significant (p = 0.085, p = 0.081, and p = 0.092 for spontaneous laceration, perineal trauma, and instrumental delivery, respectively). Trends of increasing maternal trauma with increasing second stage duration have been reported in other studies [20,22]. Excessive blood loss of more than 500 ml was found in 14.0% of Group A and 8.0% of Group B. The mean blood loss in Group A (285.3 ± 36.7 ml) was found to be more than in Group B (268.9 ± 48.2 ml), though this difference is found to be statistically insignificant (p = 0.058). Earlier studies have suggested that prolonged labour stages can increase the risk of PPH, though this is varied in different studies [23]. The neonatal outcome was similar in both groups. In the 1st minute, 8% in both groups had an Apgar <7. However, in the 5th minute, all the neonates in both groups had an Apgar ≥7. Resuscitation of the neonate was needed in 4.0% in Group A and 6.0% in Group B (p=0.648). These results agree with the findings of other studies that the second stage of labour varies moderately without any significant effect on the outcome of the neonate as long as the care of the mother in labour is adequate [24,25]. Postpartum outcomes analysis regarding wound infection occurred only in group B (6.0%) but was not significant (p = 0.081). In terms of pain, perineal pain was significantly higher in Group B as compared to the other group (36.0% vs 14.0%, p = 0.011), and maternal satisfaction was significantly higher among mothers of Group A than the other Group (100.0% vs 88.0%, p = 0.011). The result from this study is that the more uncomplicated the progress of labour, the higher postpartum comfort and satisfaction, which seems to correspond with opinions in a variety of studies on maternal perception [26]. In a word, this study has demonstrated that, whilst labour duration differences were related to some maternal experience outcomes, there were no significant differences in obstetric and neonatal morbidities between the groups.

Limitations of the Study: This study was limited by its small sample size, single-centre approach, quasi-experimental method, short-term follow-up period, subjective assessment of pain and satisfaction of mothers, and possibly varying provider skills.

V. CONCLUSION

Selective episiotomy is associated with a slightly longer second stage of labour but significantly enhances maternal satisfaction and reduces postpartum pain in the perineal area without compromising neonatal outcomes. Maternal complications and neonatal Apgar scores were comparable between groups. This supports the use of episiotomy as a safe and effective practice for normal vaginal delivery, enhancing maternal comfort and optimal obstetric care.

VI. RECOMMENDATION

Routine episiotomy would be replaced by selective episiotomy to improve maternal comfort and satisfaction without compromising neonatal outcomes. Future research with more trials and randomisation of patients might be encouraged to validate these results and standardise the use of episiotomy to improve outcomes for mothers and neonates during labour.

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