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Original Research Article

Art and craft of episiotomy

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ABSTRACT

Background: Episiotomy is the most common obstetric surgical procedure performed in labor room. Mediolateral and Midline episiotomies are the most common types. Post-delivery suture angle is the most important determinant factor which predicts the risk of anal sphincter injuries. Mediolateral episiotomy has a significantly lower risk of OASIS rate when compared to midline episiotomies. Aim of the study was to know whether mediolateral episiotomies are actually mediolateral and does the angle of episiotomy influences the risk of anal sphincter injuries, maternal/fetal complications in the perinatal period.

Methods: An observational study was conducted on 250 postpartum patients admitted to our hospital. Details of episiotomy in relation to incision angle, length, depth and post suturing angle were noted within two days of delivery.

Results: Among the subjects included there were 40.8 % incisions were RMLE, average length was 3.32cms, average suture angle is 28.69 degree. OASIS was seen in 19.5% cases more so with midline episiotomies.

Conclusions: Episiotomy is an essential, must to know skill. Compulsory supervised clinical teaching and use of skill lab training can prevent potential detrimental consequences.

Keywords: Episiotomy, Suture angle, OASIS

INTRODUCTION

Episiotomy is regarded as the most common maternal obstetric surgical procedure in the world.¹ It is the surgical enlargement of the vaginal orifice by an incision of the perineum during the second stage of labour or delivery.² Episiotomy rates all over the world vary from as low as 9.7% (Sweden) to as high as 100% (Taiwan), 70% in India, 62.50% in USA and 30% in the Europe.³ Location of the beginning of the cut, the incision angle and the length are some variables which define the episiotomy.⁴ Mediolateral and midline episiotomies are the most commonly used incisions.⁵ A mediolateral episiotomy begins at the perineal midline but directed laterally and downwards at an angle of atleast 60 degrees in the direction of the ischial tuberosity, well away from

the rectum.^{6,7} However there is always a disparity in the angle of the episiotomy while it is cut and the post-suturing angle, probably due to the distension of the perineum at crowning. The suture angle of episiotomy after primary repair was defined as the angle formed by the midline and the line of epidermal suturing.⁴ The suture angle is 15°-20° less than the incision angle. Accordingly, an episiotomy incision angle of 40°-60° was considered equivalent to a suture angle of 25°-40°.⁵ The royal college of obstetricians and gynaecologists (RCOG) recommends a 60 degrees angled episiotomy at the time of cutting.⁸ More important is the post delivery suture angle of the episiotomy after primary repair which is the angle formed by the midline and the line of epidermal suturing, which can be very acute (<30°) or too lateral (>60°) as they do not relieve the pressure on the perineum and can directly injure the anal sphincter or

increase the risk of OASIS (Obstetric anal sphincter injuries).^{5,9}

Certainly there are some drawbacks of episiotomy like asymmetry or excessive narrowing of the introitus, excessive blood loss, extension of the incision, haematomas, pain, edema, infection and dehiscence leading on to some form of sexual dysfunction, so an indicated episiotomy is ideal.⁵ Midline episiotomies are associated with an increased risk of OASIS which represent the most determinant factor for fecal anal incontinence.⁵ Mediolateral episiotomy has a significantly lower OASIS rate than midline episiotomies, 2% versus 12%–20%.^{10,11} With a suture angle of 45°, the overall incidence is reduced to 0.5%.¹² However, if the post-suturing angle is more than 60°, there is no protective effect as the episiotomy will have failed to relieve pressure from the perineum.¹³

In general, indicated use of episiotomy helps in the reduction of the likelihood of third degree perineal tears to a certain extent, avoidance of sexual dysfunction and a reduced risk of anal incontinence.¹⁴ National Institute of Clinical Excellence guidelines recommend using the mediolateral technique, if an episiotomy is indicated, at an angle of 45°–60° from the vertical axis.^{5,15} Present guidelines recommend using the mediolateral technique, a safe zone of episiotomies with a 45 to 60 degrees from the vertical axis has been proposed as protective for OASIS.¹⁶ To achieve a post suturing angle of >43 degrees, the episiotomy needs to be cut at 60 degrees.⁴ Studies also report that episiotomies are more effective when the cut is started slightly away from the midline from posterior fourchette to the anal margin. For each 4.5mm the episiotomy is started away from this line OASIS reduces by 56%.⁴

Aim and objectives

The present study is aimed to assess the accuracy of the suture angle of a right mediolateral episiotomy performed for various indications at our labour room during the day to day obstetric practice and recommend any possible suggestions for improvement. Primary aim of current study was to study whether mediolateral episiotomies are actually mediolateral and does the angle of episiotomy influences the risk of anal sphincter injuries. Objectives of current study were to assess; the angle of mediolateral episiotomy from the perineal midline, details of the episiotomy given in terms of depth, incision point, length, distance from the midline and shortest distance from the anal canal to the episiotomy, person performing and repairing the episiotomy, mode of vaginal delivery-spontaneous or assisted and maternal and fetal outcomes in the perinatal period.

METHODS

A prospective observational study was undertaken over a period of one year (September 2020 to September 2021)

in the department of obstetrics and gynecology at SSIMS and RC, Davangere. This study was conducted on postpartum patients who got admitted in department of obstetrics and gynecology and delivered by vaginal route in the immediate postpartum or before discharge. Informed consent was taken after explaining the purpose and procedure of study. All the patients included in the study had undergone a vaginal delivery with an episiotomy. Episiotomy was given at crowning in the second stage of labor and was later sutured in three layers with chromic 1-0 catgut in the third stage of labor. In the recruited patients, history was taken, and patients had a detailed examination on the day of delivery or the following day in the post natal ward for analysis of the episiotomy wound. Women were placed in the dorsal lithotomy position, resembling their position at birth. Measurement of the post-suture angle of the episiotomy was done using a divider and protractor, while the length and depth of the episiotomy was measured by using a measuring scale. For the study purpose we have taken the following classification to categorise types of episiotomies. Based on Kalis et al classification criteria, measurements of distance from midline and the suture angle were used to classify the episiotomy incisions into four groups: RMLE, lateral, midline, and unclassified episiotomy.¹⁷

Table 1: Classification used for episiotomy.

Characteristics	RMLE	Lateral	Midline	Unclassified
Distance from midline (mm)	0-3	≥10	0-3	4 -9
Suture angle (degree)	25-60	25-60	0-25	All angles

Inclusion criteria

Inclusion criteria for current study were; term gestation, preterm gestation, primigravida, multigravida, singleton pregnancy, multiple gestation, premature rupture of membranes, preeclampsia, gestational diabetes, obese patients, spontaneous birth and or instrumental delivery.

Exclusion criteria

Exclusion criteria for current study were; suspected active infection during labour, coagulation disorder in pregnancy/labour, previous perineal tears, previous surgeries on the perineum.

Statistical analysis

SPSS version 16.0 was used for statistical analysis. The study population characteristics were explored using descriptive analyses. Subsequently, differences in clinical characteristics were assessed between the different episiotomy groups using Chi-square test for categorical and one-way ANOVA test for continuous variables. A sub analysis according to the designation of the person who cut the episiotomy (consultant or trainee doctor) was

also done. Differences between trainee doctors and consultants with regard to episiotomy type and characteristics were assessed using Chi-Square test for categorical variables. The level of significance was set at $p < 0.05$.

RESULTS

Two hundred and fifty women were assessed in the study. The characteristics of the study population were, majority belong to the age group of 20-25. The mean age in the study group is 24 years (mean±SD=24.8±5.2). 72.8% of the study population are primiparous. 51.6% of the study group are in between 37-40 weeks of gestation. The average POG is 37 weeks (mean±SD=37.01±3.05). Majority belonged to the middle socioeconomic status in the study population accounting for 54%. As shown in (Figure 1) 66.8% have medical disorders of which oligohydramnios accounts for highest 44% followed by PIH 21%, GDM 19%, polyhydramnios 16%. 33.2% of the study population have no comorbidities. 64 % of the study group had a normal BMI.

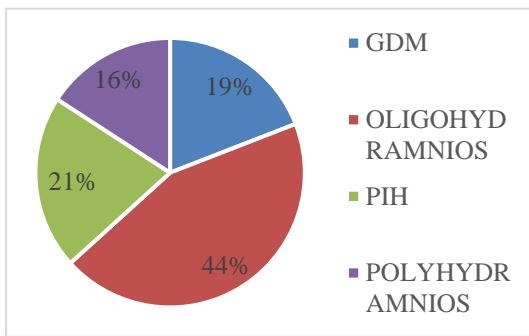


Figure 1: Medical disorders in the study population.

The mean BMI is 22.8 (mean±SD=22.8±3.05). As shown in (Figure 2-3) 55.6% of the study group were induced for vaginal delivery, 44.4% had spontaneous vaginal delivery, 95.6% of the study group underwent unaided normal deliveries and remaining 4.4% were vacuum assisted (operative). 32.4% of the study group had a birth weight of >3 kg. The average birth weight is 2.7 kg (mean±SD=2.7±0.48).

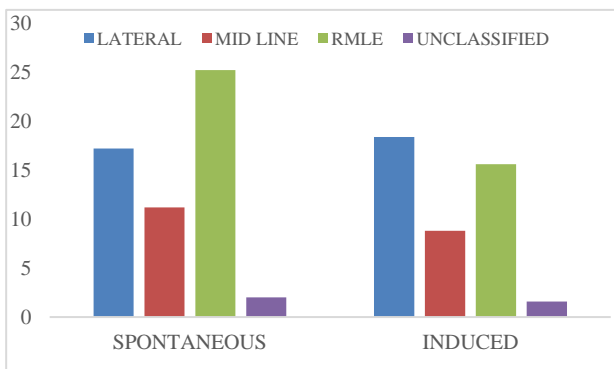


Figure 2: Onset of delivery and type of episiotomy.

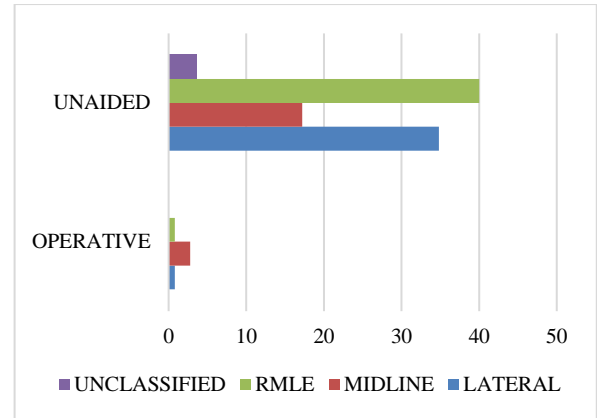


Figure 3: Assisted or unassisted delivery and type of episiotomy.

The characteristics of the episiotomy are showed in (Table 2-3). The average episiotomy incision length is 3.32cms (mean±SD=3.32±0.81). 32% of the study group had an incision length of 2-3 cm. The average distance from midline is 5.86 mm (mean±SD=28.69±7.265). Majority of the episiotomies had a distance from the midline in the range of 0-3 mm. The average suture angle is 28.69 degree (mean±SD=28.69±7.26). 78.0% of the study group had a suture angle between 25-60 degrees of which 34% were performed by PGs. According to the classification criteria, 40.8% incisions were classified as RMLE, remaining 35.6% incisions were classified as lateral midline in 20%, and unclassified in 3.6%. 40.8% of the study group had RMLE of which 21.6% were performed by consultants followed by PGs (15.2%) and Interns (4%). Most of the PGs and interns performed lateral episiotomy. A significant association was found between the distance from midline and the suture angle the longer the distance the larger the episiotomy angle. Birth outcomes as shown in (Figure 4).

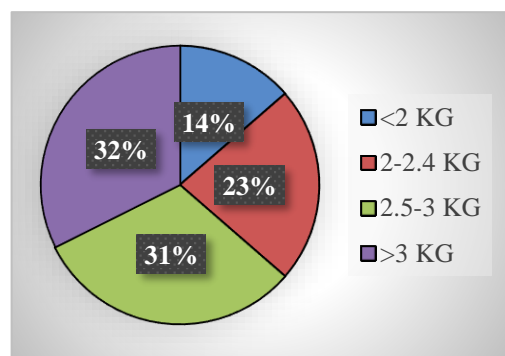


Figure 4: Birth weight of the participants.

Total 32.4% of the study group had a birth weight of >3 kg of which 19.6% were of midline type and RMLE is only of 4%. 70.4% of the study group had a normal APGAR score and 29.6 % had a low APGAR. 29.6% with low APGAR score have NICU admission of which 20% is for observation and 9.6% were under oxygen dependency out of which 7.6% were midline type and

8.8% were RMLE type. Various complications of episiotomy are showed in (Table 4-6).

Table 2: Statistical analysis of episiotomy characteristics.

Variables	Performed by	N	Mean	SD	95% confidence interval for mean		P value
					Lower bound	Upper bound	
Length	Intern	78	3.4851	0.77752	3.3098	3.6604	0.000 (sig)
	PG	107	3.4045	0.77798	3.2554	3.5536	
	Staff	65	2.9949	0.80515	2.7954	3.1944	
	Total	250	3.3232	0.80648	3.2227	3.4236	
Suture angle	Intern	64	27.16	7.482	25.29	29.03	0.006 (sig)
	PG	62	28.32	7.294	26.47	30.17	
	Staff	39	31.79	5.957	29.86	33.73	
	Total	165	28.69	7.265	27.57	29.81	
Distance from midline	Intern	78	7.08	4.871	5.98	8.18	0.000 (sig)
	PG	107	6.40	4.822	5.47	7.32	
	Staff	65	3.50	3.874	2.54	4.46	
	Total	250	5.86	4.809	5.26	6.46	

Table 3: Person who performed and repaired the episiotomy.

Type of episiotomy		Performed by			Total
		Intern	PG	Staff	
Lateral	Count	38	44	7	89
	% of total	15.2	17.6	2.8	35.6
Midline	Count	28	19	3	50
	% of total	11.2	7.6	1.2	20.0
RMLE	Count	10	38	54	102
	% of total	4.0	15.2	21.6	40.8
Unclassified	Count	2	6	1	9
	% of total	0.8	2.4	0.4	3.6
Total	Count	78	107	65	250
	% of total	31.2	42.8	26.0	100

$\chi^2 = 80.13, p=0.000$ (sig.).

Table 4: Episiotomy complications maternal outcome.

Parameters	RMLE	Midline	Lateral	Unclassified	Total
OASIS	2 (6)	20 (60.6)	4 (12.1)	7 (21.2)	33 (19.5)
Extension	10 (14.2)	39 (55.7)	12 (17.1)	9 (12.8)	70 (41.4)
Gaping	3 (16.6)	8 (44.4)	4 (22.2)	3 (16.6)	18 (10.6)
Resuturing	12 (25)	18 (37.5)	10 (20.8)	8 (16.6)	48 (28.4)
Total	27	85	30	27	169 (100)

Oasis is seen in total 33 participants.

Table 5: Immediate post partum complications.

Parameters	RMLE	Midline	Lateral	Unclassified	Total
Extension of episiotomy	12 (25)	18 (37.5)	10 (20.8)	8 (16.7)	48 (22)
Ragged tears	7 (17.5)	17 (42.5)	9 (22.5)	7 (17.5)	40 (18.4)
Vaginal tears	4 (22.2)	5 (27.8)	6 (33.4)	3 (16.7)	18 (8.25)
OASIS	2 (6)	20 (60.6)	4 (12.1)	7 (21.2)	33 (15.1)
Haematomas	14 (17.7)	39 (49.4)	12 (15.2)	14 (17.7)	79 (36.2)
Total	39 (17.8)	99 (45.4)	41 (18.8)	39 (17.8)	218

Haematoma formation is seen in 79 patients

Abnormal episiotomies were seen in 169 study participants of which OASIS is seen in 19.5%, extension in 41.4%, resuturing in 28.4%, gaping in 10.6%. OASIS is seen in 20 midline episiotomies, 7 unclassified

episiotomies, 4 lateral episiotomies and 2 RMLE episiotomies. Overall abnormal episiotomies are mostly seen in midline episiotomies (50.2%), followed by lateral group (17.7%), unclassified group (15.9%) and RMLE

(15.9%). OASIS was seen in total 33 participants, 26 of them were 3a, 3b degree. 3c and fourth degree tears were

seen in 7 participants.

Table 6: Postnatal complications.

Parameter	RMLE	Midline	Lateral	Unclassified	Total
Pain	48 (30.6)	45 (28.7)	58 (37)	6 (3.8)	157 (52)
Gaping	3 (16.6)	8 (44.4)	4 (22.2)	3 (16.7)	18 (6)
Foul smelling discharge	5 (29.4)	7 (41.1)	3 (17.6)	2 (11.7)	17 (5.6)
Infection	6 (14.6)	24 (58.5)	5 (12.2)	6 (14.6)	41 (13.5)
Oedema	3 (9.7)	14 (45.2)	12 (38.7)	2 (6.45)	31 (10.2)
Urinary retention	4 (16.7)	6 (25)	11 (45.8)	3 (12.5)	24 (7.9)
Micturition problems	2 (14.3)	3 (21.4)	5 (35.7)	4 (28.6)	14 (4.6)
Total	71	107	98	26	

Pain is the most common delayed complication.

OASIS is being repaired by participant placed in dorsal lithotomy position with lignocaine infiltration locally with proper light exposure in the supervision of consultant with vicryl 3-0/vicryl 2-0. First the rectal and anal mucosa was sutured with interrupted followed by rectal muscle, then the anal sphincter, perineal muscle and the skin. Integrity of the anal sphincter was checked by placing the little finger in anal canal directed posteriorly following the sacral curve and asking the participant to squeeze the finger with their anal muscles, and then feeling the walls of the rectum. In 31.6 % of the study population immediate postpartum complication of haematoma was seen. Over all Immediate postpartum complication were mostly seen in midline episiotomies (45.4%), followed by lateral group (18.8%), unclassified group (17.8%) and RMLE (17.8%). Post natal complications pain is seen in 52%, infection 13.5%, oedema 10.2%, urinary retention 7.9%, gaping 6%, foul smelling discharge 5.6%, micturition problems 4.6%.

DISCUSSION

Guidelines for the optimal right mediolateral technique are readily available but there is a gap in structured training on how to cut an episiotomy. In our study 40.8(%) incisions were classified as RMLE (of which 21.6% were performed by consultants, most of the PGs and interns performed lateral episiotomy, majority was unclassifiable). Average suture angle was 28.69 degree which signifies that majority of them are cut at angles <60 degree. Most incisions were close to the midline or angled laterally. Similar results were observed in the UK (where RMLE is supposed to be the standard technique), Andrews et al examined 241 study population immediately after repair to assess the characteristics of episiotomy in primigravida, out of which 98 episiotomies (13%) were true RMLE, while most incisions were closer to the midline.¹⁸ Their classification was based on the definition that RMLE should be cut at an angle at least 40° from midline without specifying the incision point, concluding that a focused training programmed is needed to cut the episiotomy. Fodstad et al on the other hand, used the same classification criteria of this study to assess

300 episiotomies in Norway (where lateral episiotomy is supposed to be the standard technique) and found that 44% of the episiotomies were actually lateral while 36% were unclassifiable.¹⁹ There is evidence that the risk of OASIS is progressively increasing with smaller episiotomy angles, for each degree reduction in the post-suture angle, there was approximately 10% increased risk for third degree tear. Episiotomies with too wide suture angles were also found to be associated with increased risk of OASIS, 19.5% in the present study population.⁵ Masri et al conducted a prospective cohort study on 240 study participants to assess the accuracy of episiotomy, most episiotomies are not RMLE and higher OASIS rate was seen in midline and unclassified group comparing to RMLE and lateral, concluding that a structured training programme is needed on how to cut episiotomy.⁵ Kalis et al conducted a randomized control trail on 60 postpartum women to assess anal incontinence in postpartum period, lower incidence of anal sphincter tearing and anal incontinence was seen in mediolateral group.⁴ Midline or unclassified incisions were associated with higher rates of trauma involving the anorectal complex, birth weight and rate of operative birth also influences. Eogan et al conducted a case-control study on one hundred primiparous women to assess if mediolateral episiotomy is associated with lower rates of significant perineal tears than midline episiotomy, their analysis showed a 50% relative reduction in risk of sustaining third-degree tear for every 6.3 degree larger the angle of episiotomy away from the perineal midline, concluding that a larger angle of episiotomy is associated with a lower risk of third-degree tear.¹² Supervised bedside clinical teaching and use of skill lab training is needed to improve episiotomy incisions quality, to fill the gap of evidence based implementation into practice with regard to cutting right mediolateral episiotomy and its potential detrimental consequences.⁵

Limitations

Sample size was limited. A pre-evaluation optimal training of interns and postgraduate students could be ideal. It was an observational study only. Comparison

was done among staff and learners. Long term outcome were not followed up. No standardized protocol for episiotomy was available. So, it was a post procedure evaluation.

CONCLUSION

Episiotomy is common procedure. Students should receive adequate instruction and supervision in performing episiotomies to avoid detrimental consequences. Competency based approach with assessment by trained supervisors will ensure rapid acquisition of this necessary clinical skill.

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Ethical approval: The study was approved by the Institutional Ethics Committee

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