

## POPULATION BASED STUDY OF EPISIOTOMY

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### ABSTRACT

**Objectives:** To estimate episiotomy rate in a rural population and to find out if higher episiotomy rate is associated with place of delivery and category of health care provider.

**Design:** Population based cross sectional study

**Setting:** Rural population near Chennai.

**Sample:** Included 442 mothers who had vaginal delivery between August 2004 and July 2005.

**Methods:** Cluster sampling was used to select the study sample. Information about episiotomy during last child birth and other details were obtained by personal interview and from available medical records.

**Results:** Overall episiotomy rate was 67% (95% CI 62.6 – 71.4). For women whose delivery was conducted by doctors the episiotomy rate was 77.4% and conducted by

nurses it was 53.1%. Episiotomy rate was very high (91.8%) when delivery was conducted in private medical college hospitals and the rates were lower when conducted in secondary and primary level institutions. Adjusted odds ratio for episiotomy was 38 when doctors conducted delivery compared to trained birth attendants and 8.9 when delivery was conducted at private medical college hospitals compared to primary health centres.

**Conclusion** Episiotomy rate in the study population is high. Probably similar high rates are found in other parts of India. The probability of episiotomy is very high when doctors conducted the delivery and when place of delivery is private medical college hospital. Evidence based restrictive practice of episiotomy to less than 30% should be adopted by all, particularly in tertiary care teaching hospitals which should serve as role models.

**Key words:** Episiotomy, Cross sectional studies, Rural population, Epidemiology

### INTRODUCTION

Episiotomy was introduced as an obstetric procedure more than 200 years ago. However it became a common practice only from the beginning of 20<sup>th</sup> century. It was then thought that all primi gravida should receive an episiotomy to protect foetal head and the pelvic floor. Popularity of episiotomy is mainly because it seems to substitute a straight, neat surgical incision for the ragged laceration that otherwise might result(1). Research carried out over the last 20 years has highlighted the problems associated with the procedure, which include increased blood loss, perineal pain and dyspareunia. A number of observational studies and randomized controlled trials show that routine episiotomy is associated with an increased incidence of anal sphincter and rectal tears(2,3,4). The long held belief that postoperative pain is less and healing improved with episiotomy compared with perineal tear appears not to be true(5).

It is now very important to improve new birthing techniques that maintain the integrity of the perineum which do not involve surgical procedures(6). A randomized controlled trial done recently, concluded that avoiding episiotomy at tears presumed to be imminent increases the

rate of intact perineum, reduces postpartum perineal pain and does not have any adverse effects on maternal or fetal morbidity(7). Episiotomy at a perineal tear presumed to be imminent does not have any advantage with regard to pelvic floor function and should be avoided(8). Very little information is available about episiotomy rates in India. This study was done to estimate episiotomy rate in a rural population and to find out if higher episiotomy rate is associated with place of delivery and category of health care provider.

### METHODS

This cross sectional study was done in a designated rural population near Chennai. This population is served by 10 health sub centres, 1 primary health centre, and few private hospitals. They also have access to taluk hospitals and district hospitals. A few private and Government medical college hospitals are available within about 30 kilometers from the study area.

Initially the plan was to use simple random sampling method for selection of study subjects. However in view of logistic constraints common in population based studies, cluster sampling method was used to select randomly from the whole population, 442 mothers who had vaginal delivery during the last one year (August 2004 to July 2005).

Information about place of delivery, who conducted the delivery, if the delivery was normal or induced / instrumental, whether pre term, term or post term, parity, birth weight, age of the mother at birth of last child and other baseline information were obtained from the selected subjects after getting their informed consent.

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Socioeconomic status was assessed by Standard of Living Index (SLI), which includes 11 items on housing details, basic amenities, and ownership of land, livestock and durable goods. The scoring ranges from 0 to 67 classified as low, medium and high(9). Each study participant was asked if she had episiotomy (If the opening of the birth canal was cut at the time of vaginal delivery). At the end of the interview, medical record / discharge summary if available was verified for recorded evidence of episiotomy.

SPSS version 10 was used for data entry and analysis. Episiotomy rates were calculated as percentages with 95% confidence interval overall and for subgroups. X<sup>2</sup> test was used as statistical test of significance for comparison between percentages. Odds ratios and adjusted odds ratios with 95% confidence intervals were found using logistic regression analysis. Approval for this study was obtained from the Medical Ethics Committee of Sri Ramachandra Medical College & Research Institute, Chennai.

## RESULTS

The mean age of the 442 women selected for the study was 23.9 years (SD 3.5). Among them 14.7% were 20 years and below, 84.6% were between 21 to 35 years and 0.7% were 36 years and above. For 39.6% of women it was first delivery, for 40.0% second delivery, for 14.5% third delivery and for 5.9% it was more than three deliveries.

Primary health care setting was the place of delivery for 20.5%, secondary and tertiary care settings were the place of delivery for 42.6% and 31.7% of deliveries respectively. In terms of public and private sectors, 62.2% of deliveries were conducted at Government (public sector) and 32.6% at private hospitals (private sector). The remaining 5.2% of deliveries occurred at home.

Out of 442 mothers who had vaginal delivery during the (last) one year, 296 underwent episiotomy with an episiotomy rate of 67% (95% CI 62.6%, 71.4%). The episiotomy rate was highest when delivery was conducted by doctors to the extent of 77.4% followed by 53.1% when conducted by nurses and 5.0% when conducted by trained birth attendant. (Trained birth attendants are women selected from rural communities and given training for conducting labour). The differences in the episiotomy rates are found to be statistically significant.

The episiotomy rate was very high when delivery was conducted in private medical college hospitals to the extent of 91.8% followed by government medical college hospitals, private hospitals, district hospitals, taluk hospitals, primary health centres and health sub centres. When classified as primary, secondary and tertiary health care settings the episiotomy rate was highest in tertiary care setting. In terms of public and private sectors the episiotomy rate was much higher for private sector. The differences in the episiotomy rates are found to be statistically significant (Table 1).

**Table - 1 Episiotomy rates and place of delivery.**

Place of delivery	Episiotomy rate	95% CI	p value
<b>Type of health institutions</b>			
Private medical college hospitals	91.8	84.1 - 95.5	
Government medical college hospitals	74.7	65.8 - 83.6	
Private hospitals	74.7	66.0 - 83.4	
District Hospitals	69.5	57.8 - 81.2	<0.01
Taluk hospitals	67.6	51.9 - 83.3	
Primary health centres	55.1	44.1 - 66.1	
Health sub centres	23.1	0.2 - 46.0	
<b>Levels of Health Care</b>			
Tertiary level institutions	80.7	74.2 - 87.2	<0.01
Secondary level Institutions	71.8	65.4 - 78.2	
Primary level institutions	50.5	40.2 - 60.8	
<b>Private / Public institutions</b>			
Private	80.6	74.1 - 87.1	<0.01
Public	64.7	59.1 - 70.3	

The episiotomy rate was 55.6% in pre term deliveries and 67.1% in term deliveries. Episiotomy was done in 60.6% of normal delivery and it was much higher (83.6%) in induced / instrumental delivery. Episiotomy rate was 61.7% when the birth weight was below 2500 grams and it was much higher for birth weight between 2500 to 3500 grams and for more than 3500 grams (Table 2).

**Table – 2 Episiotomy rates, duration of pregnancy, type of delivery and birth weight**

	Episiotomy rate	95% CI	p value
<b>Duration of Pregnancy</b>			
Preterm	55.6	23.1 - 88.1	0.5
Term	67.1	62.7 - 71.5	
Post term	100	---	
<b>Type of Delivery</b>			
Normal	60.6	55.2 - 66.0	<0.01
Induced / instrumental	83.6	77.0 - 90.2	
<b>*Birth weight (grams)</b>			
< 2500	61.7	51.1 - 72.3	0.3
2500 – 3500	70.3	65.2 - 75.4	
> 3500	76.7	61.6 - 91.8	

\*(Information available only for 414)

In primipara the episiotomy rate was highest to the extent of 83.4%. For second, third and more than third order of deliveries the episiotomy rates were 66.7%, 37.5% and 30.8% respectively and the differences are statistically significant

( $p < 0.01$ ). Episiotomy rate was highest among mothers who were 20 years of age and below and it was highest for mothers with high standard of living index (Table 3).

**Table 3 Episiotomy rates, parity, age of mother at last birth and standard of living index**

	Episiotomy rates%	95% CI	p value
<b>Parity</b>			
Primi	83.4	77.9 - 88.9	<0.01
Second	66.7	59.8 - 73.6	
Third	37.5	25.6 - 49.4	
More than three	30.8	13.1 - 48.5	
<b>Age of mother at (last) child birth</b>			
20 years & below	76.9	66.7 - 87.1	0.18
21 – 35 years	65.2	60.4 - 70.0	
36 years & above	66.7	13.4-100.0	
<b>Standard of living index</b>			
High	76.3	69.9 - 82.7	<0.01
Middle	69.3	62.0 - 76.6	
Low	50.4	41.4 - 59.4	

Even after controlling for type of delivery, duration of pregnancy, birth weight, parity, age of the mother at birth of last child and standard of living index, the probability for episiotomy was higher to the extent of 12.6 and 38.0 times when nurses conducted the delivery and doctors conducted the delivery respectively compared to when trained birth attendants conducted the delivery. Similarly the probability for episiotomy was higher to the extent of 1.7, 2.0, 1.8, 2.4 and 8.9 times when delivery was conducted at taluk hospitals, district hospitals, private hospitals, government medical college hospitals and private medical college hospitals respectively compared to when the delivery was conducted at primary health centres (Table.4).

The probability for episiotomy was also higher when delivery was conducted in tertiary level institutions or in secondary level institutions compared to primary level institutions. Probability for episiotomy was higher in private institutions compared to public institutions, however the odds ratio is not statistically significant (Table.4).

As mentioned earlier information about episiotomy was obtained directly from the participants since in rural populations most individuals do not preserve the medical records given to them at the time of discharge from the

**Table- 4 Probability of episiotomy based on category of health care providers conducting delivery and place of delivery.**

	Un adjusted Odds ratio	95% CI	p value	*Adjusted Odds ratio	95% CI	p value
<b>Category of health care providers</b>						
Trained birth attendants	1.0			1.0		
Nurses	21.5	2.8 – 164.8	0.03	12.6	1.4 – 112.1	0.02
Doctors	65.0	8.5 – 493.7	< 0.01	38.0	4.3 – 336.7	< 0.01
<b>Place of delivery</b>						
<b>Type of health care institution</b>						
Primary Health centres	1.0			1.0		
Taluk Hospitals	1.7	0.7 – 4.0	0.21	1.7	0.7 – 4.6	0.29
District Hospitals	1.9	0.9 – 3.8	0.09	2.0	0.9 – 4.6	0.11
Private Hospitals	2.4	1.3 – 4.6	0.07	1.8	0.8 – 3.9	0.16
Govt. Medical Colleges	2.4	1.3 – 4.6	0.08	2.4	1.1 – 5.1	0.03
Private Medical colleges	9.1	3.0 – 27.9	< 0.01	8.9	2.6 – 30.7	< 0.01
<b>Levels of Health Care</b>						
Primary Level Institutions	1.0			1.0		
Secondary Level Institutions	2.5	1.5 – 4.2	< 0.01	2.2	1.2 – 4.2	0.01
Tertiary Level Institutions	4.1	2.3 – 7.4	< 0.01	4.1	2.0 – 8.2	< 0.01
<b>Private / Public Institutions</b>						
Public	1.0			1.0		
Private	2.3	1.4 - 3.7	< 0.01	1.8	1.0 – 3.1	0.05

\*Adjusted for type of delivery (normal or induced/instrumental), term (pre term, term or post term), birth weight (low, normal or high), parity (primi, second para, third

para and more than three para), age of the mother at birth of last child (20 years & below, 21 to 35 years and 36 years & above) and standard of living index (high, medium and low)

hospital. As expected out of 442 mothers who had vaginal delivery during the (last) one year, only 173 (39.1%) had medical records of delivery available with them. Among those who had medical records available, there was recorded evidence of episiotomy for 92 mothers with an episiotomy rate as high as 53.2%. The recorded evidence of episiotomy tallied totally with the participants' own version of having undergone episiotomy.

Even when the 92 mothers with recorded evidence of episiotomy alone were analyzed, the same trend is seen with highest episiotomy rate of 61.8% when doctors conducted the delivery and 96.2% when the delivery was conducted in private medical college hospitals. Similarly the same trend is seen with 1.2 times higher probability for episiotomy when doctors conducted the delivery compared to birth attendants and 197 times higher risk for episiotomy when the delivery was conducted in Private medical college hospitals compared to primary health centres.

Post natal complications were more common among women who had episiotomy (14.5%) compared to those who did not have episiotomy (4.8%) and the difference is statistically significant ( $p < 0.05$ ). Most common complications were continued perineal pain and wound infection.

Out of the 442 women, 363 had episiotomy at least in one of their deliveries with an overall episiotomy rate of 82.1% (95% CI 78.5 – 85.7). Among women who had 2 deliveries, 60.8% had episiotomy both times. Among women who had 3 deliveries, 26.6% had episiotomy all three times.

## DISCUSSION

The study population though located in a designated rural area, being near Chennai city, the population has access to primary, secondary and tertiary levels of health care and also availed both private and public sector facilities. This feature made it possible to estimate episiotomy rates in different institutions and categories of health care providers.

An ideal rate of episiotomy, if there is one, has yet to be defined that balances optimal maternal and fetal outcomes(10). Consensus is still being arrived at on what should be the acceptable and reasonable episiotomy rate and what are the specific maternal and fetal indications for episiotomy. However there is evidence that episiotomy rate of more than 30% is not acceptable and episiotomy should be done on selective basis than done as a routine(11). Many authors suggest use of episiotomy in not more than 30% of vaginal deliveries(3, 12). An overall episiotomy rate of 67% found in this study population is high and may be similar high rates of episiotomy are found in other parts of India. Higher the level of health care institution higher is the episiotomy rate found. In tertiary health care set up, the episiotomy rate is found to be very high (80.7%) and

particularly in private sector medical college hospitals it is extremely high (91.8%). Similarly it is very high when doctors conduct the delivery (77.4%). Whatever way sub grouping is done, either by duration of pregnancy, type of delivery, birth weight, parity, age of mother at birth of last child or standard of living index, the episiotomy rate is high except when the parity is more than three (Tables 2 & 3).

Cochrane systematic review on episiotomy for vaginal birth concludes that restrictive episiotomy policies appear to have a number of benefits than routine episiotomy policies(13). With restrictive episiotomy use, the episiotomy rate, anal sphincter laceration rate were all reduced by 50%(14). Evidence does not support maternal benefits traditionally ascribed to routine episiotomy(15). The use of episiotomy increased the risk of extensive perineal tears without a reduction in the risk of shoulder dystocia(16). Despite a relative paucity of clinical evidence justifying its routine use, high percentage of all vaginal deliveries include an episiotomy in different parts of the world. A study done in Jordan has found an episiotomy rate of 39%(17). In Lagos, Nigeria episiotomy rate is 54.9%(18) and in Brazil it is 94.2%(19). Episiotomy has been routinely used in the United States for nearly a century. As recently as 1987, episiotomy was used in 62% of all vaginal deliveries. Study done in Pittsburgh, USA found a decline in episiotomy rate from 59.7% to 45.0% from 1995 to 2000(10). Study done in the Department of Gynecology and Obstetrics, Charles University and Faculty Hospital Pilsen found episiotomy rate of 75%(20). Public hospitals in Hong Kong have an episiotomy rate of 85.5%(21).

Medline analysis from 1970 to 2005 concludes that there is no evidence in literature favoring a liberal policy over a restrictive policy for the use of episiotomy both in terms of fetal and maternal indications and the only specific indication that could be retained after analysis was the short perineum when the distance between the fourchette and the center of the anus is less than 3 cm(22). We can reasonably conclude that episiotomy rate of more than 30% in any institution could be due to other reasons than due to real fetal or maternal indications. This study indicates persons conducting delivery and indirectly place of delivery as important extraneous factors for high rates of episiotomy. The probability for episiotomy was higher to the extent of 38.0 times and 12.6 times when delivery was conducted by doctors and by nurses respectively compared to that of trained birth attendants even after controlling for possible confounders. Similarly the risk of episiotomy was higher to the extent of 8.9 and 2.4 times when delivery was conducted at private medical college hospitals and government medical college hospitals respectively compared to when delivery was conducted at primary health centres. Risk of episiotomy was 4.1 and 2.2 times higher when delivery was conducted in tertiary level institutions and secondary level institutions compared to primary level institutions respectively (table

5). This may be due to the fact that doctors conduct deliveries more often in tertiary and secondary level institutions.

The higher rates of episiotomy in higher levels of health centers and more in private sector than in public sector is the trend seen in many other countries also. In Canada the rate of episiotomy was higher among the obstetrician group compared to the family physician group(23). In USA, during intra-partum care women managed by family physicians were less likely to have an episiotomy as compared with managed by obstetricians(24), and women admitted to obstetrician supervised teaching services were more likely to have higher episiotomy rate than family practice teaching services(25). A study done in Australia shows that privately insured women, are twice as likely to experience episiotomy as publicly insured women after controlling for clinical and other factors(26). A study done in US, shows that the strongest predictor of episiotomy use was practitioner type, with women attending private physicians having an adjusted 7 fold increased risk for episiotomy after controlling for year of delivery, maternal age, race, birth weight, mode of vaginal delivery, parity, and history of cesarean delivery(10)

Tertiary and secondary level health care institutions adopt better intra natal care compared to primary level institutions. However in the case of episiotomy it is found to be in the reverse. What could be the reasons? It may be because of the type of training received by doctors and nurses as students in medical college hospitals and may be because of the interventionist attitude currently among some specialists and practitioners. The possibility of commercial advantage of episiotomy in some institutions also cannot be ruled out.

## CONCLUSION

There is an urgent need for evidence based practice guidelines for specific maternal and fetal indications for episiotomy. As suggested by Faruel Fosse H, a program aiming at continuous improvement in quality of care after episiotomy including various actions like training courses, audits, presence of a staff leader, episiotomy rate feed back per midwife or obstetrician could help reduce the use of episiotomies(27). Evidence based restrictive practice of episiotomy to less than 30% should be adopted by all particularly in tertiary care teaching hospitals which should serve as role models.

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