ORIGINAL ARTICLE

Antibiotic Prophylaxis with Episiotomy—Is it Necessary?

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Abstract

Background: A hospital-based prospective randomized controlled trial was conducted at a tertiary care hospital. The aim of the study is to determine if a single dose of intravenous antibiotic was superior to a course of oral antibiotics post-episiotomy or no antibiotics at all.

Materials and methods: A total of 300 cases undergoing normal vaginal delivery with episiotomy were included in this study and were randomly divided into three groups.

Group A received a single prophylactic injectable dose during episiotomy, group B received oral antibiotics for 3 days after the delivery, and group C received no antibiotics. The groups were compared per day 3 total leukocyte count (TLC), presence of foul-smelling lochia, episiotomy gaping, and mean redness, edema, ecchymosis, discharge, approximation (REEDA) score at the time of discharge.

Results: The mean age of the study group was 25.09 years with no difference between the study groups ($p = 0.356$). No difference was seen among IV antibiotic, oral antibiotic, and no antibiotic groups with respect to the mean total leukocyte count on the third postoperative day ($p = 0.69$). The prevalence of episiotomy gaping was seen in 2%, 3%, and 1% cases among IV antibiotic, oral antibiotic, and no antibiotic groups, respectively ($p = 0.60$). The mean REEDA score in subjects of IV antibiotic, oral antibiotic, and no antibiotic groups was 3.91, 4.11, and 4.04, respectively ($p = 0.49$). None of the patients in any of the groups showed long-term complications like keloid.

Conclusion: The present study showed that there is no additional benefit of prophylactic antibiotics, given before or after episiotomy.

Keywords: Episiotomy, Gaped episiotomy, Prophylactic antibiotics, REEDA score.

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Introduction

The episiotomy is defined as deliberate incision on perineum to enlarge the vaginal opening. This surgical incision is given when the presenting part is distending the vulva, almost at the end of the second stage of labor. After delivery of the baby and placenta, the episiotomy wound is sutured with an absorbable suture material.[1] Episiotomy was introduced in obstetric practice to facilitate vaginal births. Episiotomy wound is a clean wound but because of proximity to the anal canal, vaginal and bowel flora may contaminate the area. Therefore, episiotomy wound is named as "clean-contaminated" wound.[2] Antibiotic prophylaxis is given to avoid infection or contamination by surgical incision. It is generally given in the case of complete perineal tear, manual removal of placenta, or some cases of cesarean section.[3] Episiotomies are anatomically similar to a second-degree perineal laceration, involving the vaginal mucosa, connective tissue, and underlying muscles, and might not warrant the routine use of prophylactic antibiotics.[3–6] However, the use of prophylactic antibiotics for episiotomy seems to vary widely. In high-income countries, the use of prophylactic antibiotics for episiotomy is not practiced without any evidence of infection.[4,5] However, in low-income countries like India, administering antibiotics with episiotomy is almost a norm.[6] Antibiotic prophylaxis is a low-cost, accessible intervention that may prevent considerable maternal morbidity. It is, therefore, important to establish the benefits of prophylactic antibiotics and also to assess whether there are any adverse effects on the mother or the infant. However, the current evidence regarding the routine use of prophylactic antibiotic with episiotomy is limited. With this background, the present study was planned to determine whether antibiotic prophylaxis used before or after episiotomy reduces the incidence of wound infection.

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Materials and Methods

The prospective randomized control study was conducted at the Department of Obstetrics and Gynecology, MGM Hospital, Navi Mumbai, Maharashtra. The study population included all the patients undergoing vaginal delivery with episiotomy or having the first- or second-degree perineal tears during the study period of November 2015 to October 2017. A total of 300 cases undergoing normal vaginal delivery with episiotomy were included in the study. The patients were randomly divided into three groups (100 each) using computer-generated random numbers.

1. Group A: Received a single prophylactic IV dose of augmentin 1.2 g (clavulanic acid 200 mg + amoxicillin 1000 mg) just before an episiotomy.
2. Group B: Received tab augmentin 625 mg (clavulanic acid 125 mg + amoxicillin 500 mg) twice daily for 3 days after the delivery.
3. Group C: Received no antibiotics.

Inclusion Criteria

- Patients undergoing full-term normal delivery.
- Patients with no associated comorbidities like anemia, gestational diabetes mellitus (GDM), pregnancy induced hypertension (PIH), or premature rupture of membranes (PROM).
- Patients not allergic to the above-mentioned antibiotics.
- Patients having leukocyte counts below 25,000.

Outcome Measures

The following outcome measures were compared between the three groups:

- Day 3 total leukocyte counts
- Foul-smelling lochia
- Wound gape
- Keloid (long-term outcome)

The significance threshold of the *p* value was set at <0.05.

Results

The mean age of the study group was 25.09 years with no difference between the study groups ($p = 0.356$). Out of the total 300 cases, 60.3% were registered cases, while 39.7% were unregistered deliveries (Table 1). Most of the patients were primipara (64.7%), while the remaining 35.3% were multipara. No difference was observed between the study groups with respect to parity ($p = 0.356$). Most of the deliveries in all three groups were term deliveries (37–42 weeks) with no difference between the study groups in terms of gestation age ($p = 0.412$). Normal episiotomy wound was achieved in 92.7% cases overall, while first-degree perineal tears (Table 2) were seen in 5%, 7%, and 6% cases of IV antibiotic, oral antibiotic, and no antibiotic groups, respectively. Second-degree perineal tears were inflicted in 2%, 1%, and 1% cases of IV, oral, and no antibiotic groups, respectively ($p = 0.93$). No difference was seen among IV antibiotic, oral antibiotic, and no antibiotic groups with respect to the mean total leukocyte count (Table 3) at admission and on the third post-op day ($p > 0.05$). The prevalence of foul-smelling lochia (Table 4) was seen in 3%, 5%, and 5% cases among IV antibiotic, oral antibiotic, and no antibiotic groups, respectively ($p = 0.72$). The prevalence of episiotomy gaping (Table 5) was seen in 2%, 3%, and 1% cases among IV antibiotic, oral antibiotic, and no antibiotic groups, respectively ($p = 0.60$).

Table 1: Distribution of cases as per registration of pregnancy

Registration of pregnancy	*Group*			
	IV antibiotics	*Oral antibiotics*	*No antibiotics*	*Total*
Registered	59	60	62	181
	59.0%	60.0%	62.0%	60.3%
Unregistered	41	40	38	119
	41.0%	40.0%	38.0%	39.7%
Total	100	100	100	300
	100.0%	100.0%	100.0%	100.0%
p value: 0.772				

Out of the total 300 cases, 60.3% were registered cases, while 39.7% were unregistered deliveries

Table 2: Distribution of cases as per status of episiotomy wound

Episiotomy wound	*Group*			
	IV antibiotics	*Oral antibiotics*	*No antibiotics*	*Total*
Normal	93	92	93	278
	93.0%	92.0%	93.0%	92.7%
First-degree perineal tear	5	7	6	18
	5.0%	7.0%	6.0%	6.0%
Second-degree perineal tear	2	1	1	4
	2.0%	1.0%	1.0%	1.3%
Total	100	100	100	300
	100.0%	100.0%	100.0%	100.0%
p value: 0.93				

Normal episiotomy wound was achieved in 92.7% cases overall, while the first-degree perineal tears were present in 5%, 7%, and 6% cases of IV antibiotic, oral antibiotic, and no antibiotic groups, respectively. The second-degree perineal tears were inflicted in 2%, 1%, and 1% cases of IV, oral, and no antibiotic groups, respectively ($p = 0.93$)

Table 3: Distribution of cases as per mean leukocyte count on day 3

Variables	*Group*	*N*	*Mean*	*SD*	*p value*
TLC (day 1)	IV	100	9987.40	971.80	0.77
	Oral	100	10034.20	673.40	
	Placebo	100	10923.00	781.20	
TLC (day 3)	IV	100	13369.21	971.80	0.69
	Oral	100	14043.11	673.40	
	Placebo	100	13999.65	781.20	

No difference was seen among IV antibiotic, oral antibiotic, and no antibiotic groups with respect to the mean total leukocyte count at the admission and on the third postoperative day ($p > 0.05$)

Table 4: Distribution of cases as per presence of foul-smelling lochia

Foul-smelling lochia	*Group*			
	IV antibiotics	*Oral antibiotics*	*No antibiotics*	*Total*
No	97	95	95	287
	97.0%	95.0%	95.0%	95.7%
Yes	3	5	5	13
	3.0%	5.0%	5.0%	4.3%
Total	100	100	100	300
	100.0%	100.0%	100.0%	100.0%
p value: 0.72				

The prevalence of foul-smelling lochia was seen in 3%, 5%, and 5% cases among IV antibiotic, oral antibiotic, and no antibiotic groups, respectively ($p = 0.72$)

Table 5: Distribution of cases as per presence of gaping of episiotomy wound

Episiotomy gape	*Group*			
	IV antibiotics	*Oral antibiotics*	*No antibiotics*	*Total*
No	98	97	99	294
	98.0%	97.0%	99.0%	98.0%
Yes	2	3	1	6
	2.0%	3.0%	1.0%	2.0%
Total	100	100	100	300
	100.0%	100.0%	100.0%	100.0%
p value: 0.6				

Prevalence of episiotomy gaping was seen in 2%, 3% and 1% cases among IV antibiotic, oral antibiotic and no antibiotic groups, respectively ($p = 0.60$)

Discussion

Episiotomy was introduced in obstetric practice to facilitate normal births and prevent maternal and fetal complications. Though there is a very high risk of contamination due to proximity with the vagina, urinary meatus, and the anal canal, the incidence of episiotomy infection is only between 0.3% and 5%.[7] The real aim of using antibiotic with episiotomy is to prevent infection by reaching therapeutic antibiotic levels at the time when microbial contamination is most likely to occur.[8] Prophylaxis is characterized by the use of broad-spectrum antibiotics (e.g., ampicillin, amoxicilline, cephalosporin, or combination of antibiotics) effective against the microorganism most likely to cause infections. The routine use of antibiotic prophylaxis varies greatly around the world.[7] As episiotomy is anatomically similar to a second-degree perineal laceration, the routine use of prophylactic antibiotics is not warranted in the case of the first- and second-degree perineal tears.[3–5] More importantly, the routine use of antibiotics increases the risk of antibiotic resistance among microorganisms. In the present study, we, thus, aimed to compare the utility of routine use of antibiotics after episiotomy and also to compare the efficacy of single dose of intravenous antibiotic with a full course of oral antibiotics. A total of 300 cases undergoing normal vaginal delivery with episiotomy were included in the study and they were randomly divided into three groups: Group A received a single prophylactic injectable dose just before the episiotomy, Group B received oral antibiotics for 3 days after the delivery, and Group C no antibiotics. The three groups were then compared for the development of symptoms and signs of infections. The mean age of the study group was 25.09 years with most of the females being primipara (64.7%). No difference was observed among the study groups with respect to age, parity, gestation age, and type of episiotomy wound. Normal episiotomy wound was achieved in 92.7% cases overall. The second- or third-degree perineal tears were inflicted in 2%, 1%, and 1% cases of IV, oral, and no antibiotic groups, respectively (p 0.93). On the follow-up examination during the hospital stay, no difference was observed among IV antibiotic, oral antibiotic, and no antibiotic groups with respect to the mean total leukocyte count on the third post-op day (p 0.69). Similarly, the prevalence of foul-smelling lochia and episiotomy gaping was seen in 3%, 5%, and 5% and 2%, 3%, and 1% cases each among IV antibiotic, oral antibiotic, and no antibiotic groups, respectively (p 0.72, 0.60).

Thus, in the present study, we observed that the universal infection control measures like wearing a mask, hand washing, use of sterile gown and gloves, disinfection of perineal area, and sterilization of instruments which were followed at our institute minimized the risk of episiotomy infection. Therefore, the prophylactic antibiotic has no additional role in the prevention of infection after episiotomy. To the best of our knowledge, no randomized control trial has compared the outcome after routine antibiotic prophylaxis in episiotomy cases as compared to the non-usage of antibiotics. Most of the available literature is on the efficacy of antibiotic prophylaxis for the third- and fourth-degree vaginal tears, which is less frequently encountered complication of episiotomy (when performed correctly). Buppasiri et al.[9] did not find any difference in episiotomy wound complications at the time of discharge of the patient and at 6 weeks after delivery. Liabsuetrakul et al.[10] also did not find a reduced infection rate with the use of prophylactic antibiotics. Bonet et al.[7] in another recent review concluded that evidence is not strong enough to recommend prophylactic antibiotics for the third- or fourth-degree perineal tears after delivery.

Conclusion

We, thus, conclude that the use of routine prophylactic antibiotics is not recommended after episiotomy as it gives no additional benefits; instead, it may have adverse effects on the mother and the baby. Side effects include drug resistance, elimination of beneficial microbes from mother, and the baby and drug reactions. It also increases the cost of healthcare which is not affordable by a large number of our countrymen.

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