Enema versus No-Enema in Pregnant Women on Admission in Labor: A Randomized Controlled Trial

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Objective: *To compare the maternal and neonatal outcomes between enema and no-enema in pregnant women on admission in labor*

Material and Method: *One thousand and one hundred term pregnant women with labor pain were selected randomly on admission to be assigned into two groups at Rajavithi Hospital from 1 February 2002 to 15 June 2002. Five -hundred and thirty-nine cases received enema and five-hundred and sixty one cases received no-enema. Seventy three women (39 and 34 cases from the enema and no-enema groups, respectively) were excluded because of cesarean section due to obstetric indications. Five hundred cases received enema and five -hundred and twenty -seven cases received no-enema. All cases were delivered vaginally.*

Results: *There was no statistical significant difference between the two groups with regards to maternal age, gestational age, gravidity, parity, mode of delivery, type of episiotomy and degree of perineal tear. Fecal contamination rate during the second stage of labor was significantly higher in the women who received no-enema (34.9%) in comparision with those receiving enema (22.8% ($p < 0.001$). No neonatal infection occurred in both groups. Duration of labor was significantly longer in the women who received no-enema (459.8 min) compared with those who received enema (409.4 min) ($p < 0.001$).*

Conclusion: *No-enema methods on admission in labor had significantly more increase in fecal contamination in the second stage of labor and longer duration of labor than the enema method. But there was no difference in perineal wound infection and neonatal infection between both groups.*

Keywords: *Fecal contamination, Duration of labor, Perineal wound infection, Neonatal infection, Enema, No enema*

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Preparatory enema has long been used in all pregnant women admitted in labor because it is believed to have a benefit such as: an empty bowel reduces fecal contamination causing perineal wound and neonatal infection, and shortening the duration of labor as a result of no fecal obstruction in the descent of the presenting part[1,2]. " Why did we want to do this trial ?", one of the most frequent questions, asked when we planned to carry out this study because Cuervo et al [3] concluded in their Cochrane review that there is not enough evidence to evaluate the use of routine enemas during the first stage of labor. The authors answered that there were only two studies in their review. In the first study, inclusion bias possibly happened when the staff excluded women if they had fecal soiling prior to their evaluation[4]. Another study was only unpublished data and it had only enough power to find the differences for respiratory tract infection in newborns[5]. A total number of 665 women were included in both studies[4,5]. So the authors designed a bigger and better randomized controlled trial to evaluate the exact maternal and neonatal outcomes between enema and no-enema on admission in labor.

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Material and Method

From February 1, 2002 to June 15, 2002 a total of 1,100 term pregnant women admitted for delivery were randomly allocated to receive either enema or

no-enema. All were in the gestational age range of 37-42 weeks and met the inclusion criteria consisting of living singleton pregnancy, vertex presentation, having normal bowel function, and with true labor. The pregnancies with medical or obstetric complications such as history of premature rupture of membranes, unexplained vaginal bleeding, previous uterine scar or previous antibiotics usage within 7 days before admission were excluded from the present study. The hospital 's ethics committee approved the study and written informed consent was obtained from the mothers.

The enema in the present study (Uni-ma enema) consisted of sodium biphosphate and sodium phosphate 118 ml. Fecal contamination imitating the previous study[1] were divided into four scales: 0, clean (no contamination); 1, minimal fecal soiling but no formed motion or appreciable diarrhea; 2, not more than two formed motions or episodes of diarrhea; 3, frequent formed or fluid motions. Satisfactory level of pregnant women and the medical staff recorded by using the Likert scale[6]. There were 5 scales including excellent, good, average, fair and poor. All of them were attended throughout delivery by nurses, externs (the sixth year medical students), and obstetric-gynecologic residents. Just before the delivery, the perineal region was scrubbed with 4% chlorhexidine scrub and rinsed with savlon solution(1:100). The episiotomy wounds were repaired by residents or externs under the supervision of residents. After delivery, all parturients received postpartum care and were examined for perineal wound infection[7] for four days. The newborns were also observed for neonatal infection too. The data were subsequently analyzed for mean, standard diviation, frequency and percentage by using unpaired t-test or Chi-square test and SPSS computer program. The level of statistical significance was set at $p < 0.05$

The main outcome measures were duration of labor, fecal contamination, satisfaction of the parturients, accoucheurs and perineorrhaphy operators, and perineal wound and neonatal infection.

Table 1. Obstetric characteristics (N = 1027 cases)

	Enema (N = 500)	No-Enema (N = 527)	p-value
Age (yr) (x ± SD)	25.1 ± 5.5	24.9 ± 5.7	0.503*
Gestational age (wk) (x ± SD)	39.2 ± 1.2	39.0 ± 1.3	0.301*
Gravida (median)	2	2	1.00*
Parity (median)	1	1	1.00*

* with unpaired t-test

Table 2. Outcomes of the delivery (N = 1027 cases)

	Enema (N = 500) N (%)	No-Enema (N = 527) N (%)	p-value
Route of Delivery (%)			
-Normal labor (NL)	475 (95.0)	498 (94.5)	0.125
-Forceps extraction (F/E)	22 (4.4)	18 (3.4)	
-Vaccuum extraction (V/E)	3 (0.6)	11 (2.1)	
Episiotomy wound - Degree of perineal tear (%)			
No - No further tear	21 (4.2)	30 (5.7)	0.366
- Further tear: 1st degree tear	20 (4.0)	18 (3.4)	
Yes - No further tear	459 (91.8)	477 (90.5)	
- Further tear: 3rd degree tear	-	2 (0.4)	
Duration of labor (min): Total (x ± SD)	409.4 ± 215.9	459.8 ± 196.4	<0.001*

* = by unpaired t-test

Results

One thousand one hundred pregnant women were initially enrolled in the present study: 539 cases in the enema group and 561 cases in the no-enema group. Seventy three cases delivered by cesarean section due to obstetric indications after unsuccessful trial of labor were excluded (39 and 34 cases in enema and no-enema groups, respectively). Thus 500 cases receiving enema and 527 cases receiving no-enema were finally enrolled. Obstetric characteristics of both groups are not significant different as shown in Table 1. Table 2 reveals the outcomes of delivery. The duration of labor was significantly longer in the no-enema group (459.8 min) than enema (409.4 min) ($p < 0.001$) while route of delivery and degree of perineal tear were not statistical significant difference.

Table 3 reveals the incidence of fecal contamination. The fecal contamination rate of no-enema group was higher in both stages of labor but with significant difference only during the second stage ($p < 0.001$). Perineal wound infection rate were similar in both groups. In the infected cases, two cases of the enema group had fecal contamination (scale 2 and 3) in the second stage. Klebsiella pneumoniae was isolated at the episiotomy wound of one of the no-enema group. No neonatal infection occurred in both groups. The satisfactory level of the parturients in both groups were similar. The satisfactory level of labour attendants, accoucheurs and perineorrhaphy operators was significantly higher in the enema group ($p < 0.01$) but was similar in the parturients (Table 4).

Discussion

In the present study, systemic randomized controlled trial method, the biggest number of parturients, fecal contamination and satisfaction rate were the most dominant points over the other studies. A satisfactory randomization was achieved as indicated by the patient's characteristics such as: age, gravidity, parity and gestational age which were similar in both groups. In the no-enema group, the authors found a significantly longer duration of labor than those in the enema group. While Romney and Gordon[1] and Cuervo et al[5] found no difference in both groups. The different

Table 3. Incidence of fecal contamination during labor

		Number of parturients with scale of fecal contamination (%)				Total	p-value*
		0	1	2	3		
First stage of labor	Enema	453	24	22	1	500	0.191
	(N = 500)	(90.6)	(4.8)	(4.4)	(0.2)	(100)	
	No-enema	472	28	19	8	527	
	(N = 527)	(89.8)	(5.3)	(3.6)	(1.3)	(100)	
Second stage of labor	Enema	386	52	56	6	500	<0.001
	(N = 500)	(77.2)	(10.4)	(11.2)	(1.2)	(100)	
	No-enema	344	85	85	13	527	
	(N = 527)	(65.1)	(16.3)	(16.1)	(2.4)	(100)	

* = statistical significant difference by unpaired t-test ($p < 0.001$)

Table 4. Satisfactory level of parturients and medical staff (Likert scale)

	Enema ($\bar{x} \pm$ SD) (N = 500)	No-enema ($\bar{x} \pm$ SD) (N = 527)	p-value*
Parturients	3.58 ± 0.78	3.58 ± 0.89	0.922
Labor attendants	3.50 ± 0.69	3.33 ± 0.72	0.001
Accoucheurs	3.56 ± 0.91	3.30 ± 0.96	<0.001
Perineorrhaphy operators	3.54 ± 0.68	3.43 ± 0.76	0.047

* = by unpaired t-test

results may be inadequate sample size in those studies. Romney and Gordon[1] did not use any statistical method for analysis of significant difference between groups, and also included the patients whose labor was induced. However, the difference of mean duration of labor between the groups was without clinical significance.

Theoretically, fecal contamination usually occurs during the end of the first stage and the second stage of labor[2]. The present study revealed a significantly higher rate in the no-enema group only during the second stage of labor as was found in the study of Whitley and Mack[2]. It seemed to demonstrate that enema could reduce fecal contamination during the second stage of labor. The present study was different from Romney and Gordon[1] who reported a similar rate during all stages of labor. The weak point of their study was the smaller sample size and non-randomization.

The perineal wound infection had no significant differences in both enema and no-enema and was the same as that of Cuervo et al[5] even though Klebsiella pneumoniae could be isolated at episiotomy wound in one case of the no-enema group. Romney and Gordon[1] reported that it was clear that most of their patients disliked the enema but they found no evidence to support their claims while the present study revealed similar satisfaction. Dryton and Rees[4] reported a similar neonatal infection rate between the groups in the aspect of umbilical infection. Cuervo et al[5] studied in more modalities of neonatal infection such as: skin, intestine, upper and lower respiratory tract infection, meningitis,and sepsis and found no significant difference between the groups. The absence of neonatal infection in both groups may be because of the short duration and method of diagnosis. The authors used only clinical observation and 4 days of hospitalization for detection of neonatal infections.

The satisfaction of parturients were evaluated immediately after finishing the perineal wound repair. At that time, some parturients were so tired, that they did not seriously pay attention to the questionnaire. The satisfaction of accoucheurs were significantly higher in the enema group in comparision with the no-enema group ($p < 0.001$). The reason was the contamination rate during the second stage of labor in the no-enema group was higher.

Conclusion

Even though both the longer duration of labor and the more often fecal contamination rate were more significantly common in the no-enema group, there was no differece in the rate of infection such as perineal wound infection and neonatal infection in the present study.

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การสวนหรือไม่สวนอุจจาระเพื่อเตรียมการคลอดในสตรีตั้งครรภ์ที่เจ็บครรภ์คลอด: การศึกษาโดยมีกลุ่มควบคุมแบบสุ่ม

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วัตถุประสงค์: *เพื่อเปรียบเทียบผลกระทบต่อสตรีตั้งครรภ์ที่เจ็บครรภ์คลอดที่ได้รับการสวนอุจจาระและไม่ได้รับการสวนอุจจาระเพื่อเตรียมการคลอด ในด้าน*

1.1 อัตราการปนเปื้อนของอุจจาระในระยะต่างๆของการคลอด

1.2 ระยะเวลาของการคลอด

1.3 อัตราการติดเชื้อที่แผลฝีเย็บของสตรีตั้งครรภ์

1.4 อัตราการติดเชื้อในทารกแรกเกิด

วัสดุและวิธีการ: *สตรีตั้งครรภ์ครบกำหนดที่เจ็บครรภ์และเข้าเกณฑ์การคัดเลือกไว้ในการศึกษาที่ คลอดที่ รพ.ราชวิถี ตั้งแต่วันที่ 1 กุมภาพันธ์ พ.ศ. 2545 ถึงวันที่ 15 มิถุนายน พ.ศ. 2545 ได้เข้ามาในการศึกษานี้ 1,100 คน หลังจากที่ได้ตัดผู้ที่ได้รับการผ่าตัดคลอดทางหน้าท้อง 73 คน คงเหลือสตรีที่อยู่ในกลุ่มที่ 1 ซึ่งได้รับการสวนอุจจาระในการเตรียมคลอด และกลุ่มที่ 2 ซึ่งไม่ได้รับการสวนอุจจาระในการเตรียมการคลอดเท่ากับ 500 คน และ 527 คนตามลำดับ*

ผลการศึกษา: *ไม่มีความแตกต่างกันอย่างมีนัยสำคัญเกี่ยวกับลักษณะทางประชากรศาสตร์ ของ สตรีตั้งครรภ์ ได้แก่ อายุของมารดา, อายุครรภ์, จำนวนครั้งของการตั้งครรภ์ และการคลอดบุตร, วิธีการคลอด, ชนิดของการตัดฝีเย็บ และระดับความรุนแรงของการฉีกขาดของแผลฝีเย็บระหว่างกลุ่มที่ได้รับและกลุ่มที่ไม่ได้รับการสวนอุจจาระ แต่อัตราการปนเปื้อนของอุจจาระในระยะที่สองของการคลอดในกลุ่มที่ได้รับและกลุ่มที่ไม่ได้รับการสวนอุจจาระคือ ร้อยละ 22.8 และ 34.9 ตามลำดับ พบว่ามีความแตกต่างกันอย่างมีนัยสำคัญทางสถิติ ($p < 0.001$) ระยะเวลาการคลอดของกลุ่มที่ได้รับการสวนอุจจาระ พบว่าสั้นกว่ากลุ่มไม่ได้รับการสวนอุจจาระอย่างมีนัยสำคัญทางสถิติ (409.4 และ 459.8 นาที ตามลำดับ) ($p < 0.001$) อัตราการติดเชื้อบริเวณแผลฝีเย็บของกลุ่มที่ได้รับการสวนอุจจาระไม่แตกต่างกับกลุ่มที่ไม่ได้รับการสวนอุจจาระ คือร้อยละ 0.006 และ0.005 ตามลำดับ ($p = 0.547$) ไม่พบการติดเชื้อของทารกแรกเกิดในทั้งสองกลุ่ม*

สรุป: *การไม่สวนอุจจาระเพื่อเตรียมการคลอดในสตรีตั้งครรภ์ที่เจ็บครรภ์คลอดมีอัตราการปนเปื้อนของอุจจาระ ในระยะที่สองของการคลอดมากกว่าและระยะเวลาของการคลอดยาวนานกว่าเมื่อเทียบกับการสวนอุจจาระอย่างมีนัยสำคัญ แต่อัตราการติดเชื้อบริเวณแผลฝีเย็บของทั้งสองกลุ่มไม่แตกต่างกัน และไม่พบว่ามีการติดเชื้อของทารกแรกเกิดในทั้งสองกลุ่ม*