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Comparative study of outcome of labour with artificial rupture of membranes and spontaneous rupture of membranes in uncomplicated pregnancies in a district medical college

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Abstract
Labour is one of the difficult journeys for both the mother and the fetus. As the time taken in this difficult journey prolongs, so does the morbidity to both the lives. Hence many methods are practised to cut short the labour stages and one of the safest methods is Artificial rupture of membranes. The aim of this study is to know the significance of Artificial rupture of membranes in shortening the labour process and its effect on the maternal and neonatal outcome. Total of 100 patients, 50 in study and 50 in control group were enrolled in this study and the effect of amniotomy was studied and it was found that there was not much difference in both the groups in the outcome except for the total duration of labour which was found to be less in the study group.

Keywords: Labour, Amniotomy, rupture of membranes, stages of labour

Introduction
Labour is one of the important and memorable events in a woman's life. Painless and short labor has been the cherished desire of every mother and is a constant aim of obstetricians. The problems and hazards of prolonged labor, both for the mother and fetus, have been recognized for many years. The mother is exposed to a higher risk of infection, ketosis and obstructed labor, while the fetus faces the dangers of infection, asphyxia. Amniotomy (also known as intentional artificial rupture of membranes) has long been believed to reduce the duration of labor, as suggested by available literature [1–6]. The primary aim of amniotomy is to speed up contractions and, therefore, shorten the length of labor.
The mechanism by which amniotomy speeds up labor remains unclear. It is thought that when the membranes are ruptured, the production and release of prostaglandins and oxytocin increases, resulting in stronger contractions and quicker cervical dilatation (Busowski 1995) [7]. Amniotomy, or artificial rupture of the amniotic membranes, causes local synthesis and release of prostaglandins, leading to labor within 6 hours in nearly 90% of term patients. Apart from amniotomy as a method of shortening labor, it is valuable in order to introduce internal fetal monitoring devices, such as fetal scalp electrode or an intrauterine pressure catheter. It also allows visualization of the amniotic fluid to detect meconium-stained liquor in order to identify factors, which may lead to fetal compromise (Clements 2001) [8].
The present study is being done to find out whether labor management is beneficial with early amniotomy or without amniotomy

Aims and objectives
To determine effectiveness of amniotomy for routine shortening of all uncomplicated labors that start spontaneously and Effect on maternal and neonatal outcome.

Methodology
The study was conducted in SVS Medical College and Hospital, Mahabubnagar from October 2014 to 2016 in the dept of obstetrics. A total of 100 patients, 50 in the study group and 50 in the control group were enrolled after taking informed consent.

Inclusion criteria
- Age group 18-30 years
- Healthy parturients
- Spontaneous labour after 37th completed week.
- Live singleton fetus with vertex presentation
- With intact membranes
- Cervical dilatation atleast 3 cms
- No obstetric or medical complications of pregnancy

Exclusion criteria
- Patients with ruptured membranes.
- Induced labor
- Women having carried 4 or more pregnancies
- Cephalo pelvic disproportion
- Patients with obstetric and medical complications of pregnancy.
- Malpresentations
- Multiple pregnancy
- Fetal malformations
- Preterm labour (< 37 weeks)
- Meconium or blood-stained liquor patients are excluded from study
- Patients who landed up in cesarean section are excluded from study
- Any contraindication to vaginal delivery

A careful history was taken from all the patients about age, parity, period of gestation, LMP, EDD, duration of labor pains and after ruling out of any leaking and bleeding, Obstetric examination was done to confirm the fundal height, lie, and presentation of the fetus. Adequacy of liquor, estimated fetal weight. Per vaginal examination was done and Bishop's score at the time of examination was noted. All the preliminary investigations such as blood grouping and typing, Hb%, CUE, RBS, viral screening, USG were done. Progress of labor was done using a partogram and all the maternal and fetal wellbeing events were sequentially noted on partogram

Treatment plan

Objective of study was to know the role of artificial rupture of membranes done at 4 cms of dilatation to shorten the duration of labor compared to spontaneous rupture of membranes. After the perineum is prepared, patient is put in dorsal position. The women who will be undergoing ARM will be put on dorsal position with legs semi flexed. The procedure will be explained to the patients. Under all aseptic precautions membranes will be ruptured using Kocher's forceps or amnihook or amnicot. Liquor was allowed to drain out, color of liquor is noted. Fetal heart rate was recorded before and after amniotomy.

Study group

Based on the inclusion criteria, for the patients under study group, artificial rupture of membranes was done when the dilatation is 4cms. Labor was monitored drawing a partogram noting the duration of cervical dilatation, intensity of uterine contractions, descent of the presenting part. Depending on the progress of labor, if uterine contractions are not satisfactory then oxytocin drip was started. Whenever the liquor was meconium or bloodstained liquor or any arrest or protracted labour or if fetal distress was encountered or emergency LSCS or instrumental delivery was done, the case was withdrawn from the study.

Control group

The same protocol was followed in the control group without doing artificial rupture of membranes, and timing of the spontaneous rupture of membranes was noted.

After the successful vaginal delivery, APGAR was noted for 1min and 5 min.

Duration of first stage, second stage, and the third stage were recorded in the both groups.

Any complications adverse events blood loss was recorded.

Observation and results

A total of 50 cases in the study group and 50 cases in the control group were enrolled in the study. The results were subjected to chi-square test to test the significance. Total of 100 cases in which 50 are in study and 50 are in control group. Most of them (45%) are primigravida.

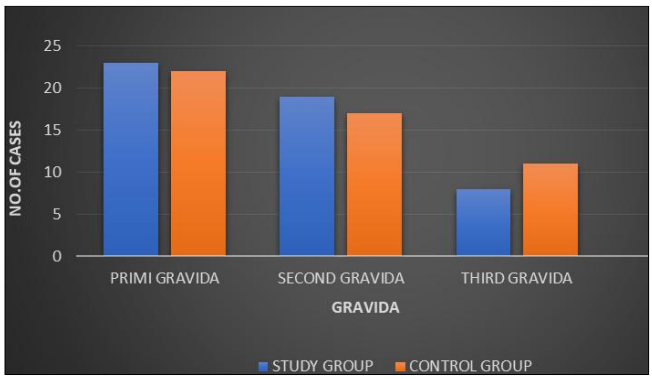

Fig 1: Distribution of cases according to gravidity

The difference in the age groups in two groups is not statistically significant P value of 0.422

Highest number of patients were between 21-25 years 21 in study group and 29 in control group respectively.

Table1: Duration of Active Phase of Dilatation

Time (In hrs)	Primigravida		Second gravida		Third gravida and more	
	Study (%)	Control (%)	Study (%)	Control (%)	Study (%)	Control (%)
1-3hrs	05(22%)	02(09%)	06(31%)	04(24%)	02(26%)	03(28%)
3-6hrs	16(70%)	05(23%)	11(58%)	08(47%)	05(62%)	07(63%)
6-9hrs	01(04%)	13(59%)	02(11%)	05(29%)	01(12%)	01(09%)
9-12hrs	01(04%)	02(09%)	-	-	-	-

In the study group 70% of primigravida became fully dilated from active phase of dilatation in 3-6hours, while in control group 61% in 6-9 hours.

Second gravida in study group 58% became fully dilated from active phase of dilatation in 3-6 hours, while in control group 47% in 3-6 hours, 30% in 6-9hrs.

There was not much difference between study group and control group in multigravida as $p>0.05$.

The average duration of dilatation stage was 4hours 40 minutes (280 min) in primigravida of study group, while it was 6hours

30 minutes (390min) in control group $P<0.05$ which is statistically significant.

Average duration of dilatation stage was 3hours 10 minutes (190min) in second gravida of study group, while it was 4hours 30minutes (270min) in control group, $P<0.05$ which is statistically significant.

Table 2: Duration of Second Stage of Labour

Time (in hrs.)	Primigravida		Second gravida		Third gravida	
	Study (%)	Control (%)	Study (%)	Control (%)	Study (%)	Control (%)
0-½	13(57%)	14(63%)	15(79%)	13(76%)	07(88%)	08(73%)
½-1	09(39%)	05(23%)	04(21%)	04(24%)	01(12%)	03(27%)
1-2	01(04%)	03(14%)	-	-	-	-

Duration of second stage of labor in most of the patients are from 0-1/2 hour in primis and multies.

Duration of second showed no difference between study group and control group both in primis and multies as calculated X^2 value was less than tabulated value($p>0.05$).

Table 3: Duration of Third Stage of Labour

Time (in min)	Primigravida		Second gravida		Third gravida	
	Study (%)	Control (%)	Study (%)	Control (%)	Study (%)	Control (%)
0-10	21(91%)	19(86%)	18(95%)	16(94%)	7(88%)	10(91%)
10-20	02(09%)	03(14%)	01(05%)	01(06%)	01(12%)	01(09%)

Duration of third stage of labor' was 0-10 minutes in maximum number of patients.

Duration of third stage did not alter between study group and control group ($p>0.05$) not significant.

Table 4: Intervention to Delivery Interval (Total Duration of Labour)

Time (in hrs)	Primigravida		Second gravida		Third gravida	
	Study (%)	Control (%)	Study (%)	Control (%)	Study (%)	Control (%)
1-3hrs	01(04%)	01(05%)	05(27%)	02(12%)	05(62%)	02(18%)
3-6hrs	18(78%)	05(23%)	13(68%)	11(64%)	02(25%)	06(55%)
6-9hrs	01(04%)	13(59%)	01(05%)	03 (18%)	01(13%)	03(27%)
9 -12hrs	03(14%)	03(13%)	-	01(06%)	-	-

The average total duration of labor in primigravida in study group was 5hours and 20 minutes (320min) and in control group was 6 hours and 55minutes (415min). The average total duration of labor in second gravid in study group was 3 hours 40 minutes (220min) and in control group 5 hours (300 min).

Total duration of labor was less in primigravida and second gravida in study group compared to control group as $p<0.05$.

There was no difference in study and control groups of third gravida as the results were statistically not significant.

Table 5: Apgar score of New Born

Score	Primigravida		Second gravida		Third gravida	
	Study (%)	Control (%)	Study (%)	Control (%)	Study (%)	Control (%)
1"<7	03(13%)	05(22%)	02(10%)	03(18%)	02(25%)	02(18%)
1">7	20(87%)	17(78%)	17(90%)	14(82%)	06(75%)	09(82%)
5"<7	02(09%)	02(09%)	0	0	0	01(09%)
5">7	21(91%)	20(91%)	19(100%)	17(100%)	08(100%)	10(91%)

There was no much difference seen in the APGAR scores of babies in study and control group.

Table 6: Post-Partum Haemorrhage

Time (in min)	Primigravida	Second gravida	Third gravida
Study	1	0	1
Control	2	2	

Total two cases of PPH in the study group and four in control group were observed. 1 in study group was due to cervical tear, 1 in study group was due to atony. 3 in control group were due to cervical tears, 1 due to uterine atony.

Discussion

The mean age of patients in control group is 23.1 and in study group is 23.86. Thus both the groups are comparable with respect to the distribution of age of patients and it is comparable to other studies like Aisha Abdulla *et al.* (24.69 vs 24.95), Faris *et al.* (21.89). Most of the studies included only primigravida, present study includes second and third gravida also. In Present study 45% are primis, 36% are second and 19% are third gravida. Aisha Abdulla [7] included 200 primigravida, 100 in each group. Noreen Majeed [8] included 100 multis, 50 in each group. Faris Anwer Rasheed *et al.* [9] included 210 primis, 105 in each group.

The average duration of dilatation stage was 280 minutes in primigravida of study group, while it was 390 minutes in control group.

The average duration of dilatation stage was 190 minutes in second gravida of study group, while it was 270 minutes in control group. P value <0.05 which is statistically significant. There was not much difference between study group and control group in multi gravida as $p>0.05$. In a study by, MD Bellad *et al.* mean duration of active phase of labour was shorter in amniotomy group (4.76 hours-*285* minutes) than control group

(5.66 hours-340 minutes) [3] In a study by, Faris Anwer Rasheed *et al.* mean duration of first stage of labor was shorter in amniotomy group (5.10 hours-306 minutes) than control group (7.80 hours-468 minutes).

In the present study there is no significant difference in the duration of second and third stage of labor with amniotomy, this is supported by studies done by Faris Anwer Rasheed *et al*. Total duration of labour was less in primigravida and second gravida in study group compared to control group as $p<0.05$.

Amniotomy is associated with shorter duration of labor as seen in other studies mentioned above. In present study Total 2 cases in the study group and 4 in control group lead to PPH. 1 case in study group and a case in control group due to uterine atony. 1 case in study group and 3 cases in control group were due to cervical tears. No significant difference between study and control group regarding atonic PPH was observed, but PPH due to cervical tears were reduced in study group. In study conducted by Faris Anwer Rasheed *et al.* the incidence of PPH was 14.3% in amniotomy group and 6.7% in control (no amniotomy) group. No significant association was found between the groups and stage three complications, other studies done by MD Bellad *et al.*, Aisha Abdulla and WD Fraser *et al.* [11] showed that early amniotomy does not increase or decrease in incidence of PPH.

Summary

100 uncomplicated term pregnant women were taken in to study, 50 in control group, and 50 in study group. The aim of study is to know the effect of amniotomy on routine shortening of all uncomplicated labor and its effect on maternal and fetal effects.

Following finding were observed during the study period

1. The average duration of dilatation stage was 4hours 40 minutes (280 min) in primigravida of study group, while it was 6hours 30 minutes (390min) in control group P<0,05 which is statistically significant.
2. The average duration of dilatation stage was 3hours 10 minutes (190mints) in second gravida of study group, while it was 4hours 30minutes (270min) in control group, $P<0.05$ which is statistically significant.
3. There was not much difference between study group and control group in third gravid as $p>0.05$.
4. Duration of second stage showed no difference between study group and control group both in primis and multies as calculated X^2 value was less than tabulated value ($p>0.05$)
5. Duration of third stage did not alter between study group and control group ($p>0.05$) not significant.
6. Total duration of labour was less in primigravida and second gravida in study group compared to control group as $p<0.05$.
7. There was no much difference seen in the APGAR scores of babies in study and control group.
8. There was no association with PPH to amniotomy.

Conclusion

Early amniotomy in the active phase of labor

1. Significantly reduces the duration of labour when compared with the practice of leaving the membranes intact until second stage.
2. Amniotomy does not increase the risk of any adverse outcome in the newborn.
3. Reduces the incidence of prolonged labor, and risks of obstructed labor, uterine rupture and septicemia can be avoided, which all contribute significantly to maternal mortality and morbidity.
4. Amniotomy is a part of active management of labor. This less expensive intervention procedure in selected cases may help in reducing the duration of labour and reduce the incidence of prolonged labor and thereby reducing the maternal morbidity and mortality in our country.

References

1. Ajadi MA, Kuti O, Oriji EO, Ogunnivi SO, Sule SS. The effect of amniotomy on the outcome of spontaneous labour in uncomplicated pregnancy. Journal of Obstetrics and Gynaecology. 2006; 26:631-634.
2. Fraser WD, Turcot L, Krauss I, Brisson-Carrol G. Amniotomy for shortening spontaneous labour. Cochrane Database of Systematic Reviews 2006; Issue 3. Art. No.: CD000015; DOI: 10.1002/14651858 (withdrawn).
3. Fraser WD, Sauve R, Parboosingh IJ, Fung T, Sokol R, Persaud D. A randomised controlled trial of early amniotomy. British Journal of Obstetrics and Gynaecology. 1991; 98:84-91.
4. Incerti M, Locatelli A, Ghidini A, Ciriello E, Malberti S, Consonni S *et al*. Prediction of duration of active labour in nulliparous women at term. American Journal of Perinataology. 2008; 25:85-89.
5. Li N, Wang Y, Zhou H. Effects of routine early amniotomy on labor and health status of foetus and neonate: a meta-analysis. Shonghua Fu Chan Ke Za Zhi (in Chinese). 2006; 41:16-9.
6. Mikki N, Wick L, Abu-Asab N, Abu-Rmeileh NM. A trial of amniotomy in a Palestinian hospital. Journal of Obstetrics and Gynaecology. 2007; 27:368-73.
7. Effects of Amniotomy versus Spontaneous Rupture of Membrane on Progress of Labour and Foetal Outcome in Primigravidae by aisha Abdullah, Sadia Saboohi, Uzma Hashami (original article)
8. Journal of Rawalpindi Medical College (JRMC) (Comparison of Artificial Rupture of Membranes with Intact Membrane in Labouring Multigravidae Noreen Majeed, Shamsa Tariq). 2013; 17(2):234-237.
9. The Impact of Early Versus Late Amniotomy on Duration of Labor, Maternal and Neonatal Outcomes in Iraqi Primigravida with Spontaneous Labor: Faris Anwer Rasheed, Alyaa Aziz Ahmed, Saad Abdulrahman Hussain.