

**ORIGINAL STUDY**

**EARLY RUPTURE OF MEMBRANE A RISK FACTOR FOR  
CESAREAN SECTION IN TERM PREGNANCY**

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**ABSTRACT**

*In normal labor membranes ruptures at almost complete dilatation at 7-8 cm, early rupture of membrane defined as rupture of membrane at a cervical dilatation <4 cm during labor and late rupture of membrane at a cervical dilatation ≥4 cm during labor. This study was designed to assess the value of early rupture of membrane in predicting poor progress of labour, abnormal position (occiput posterior transvers arrest, disproportion). From April of 2010 to April 2013 study included 100 of pregnant women enrolled nullipares and multipares were admitted in Malaxa Hospital, for labour had early rupture of membrane (72 hours, 36 before started active phase of labor) for 44% and 39% for late rupture of membrane, 7% timing was not available in the medical record, 23% were found with of green to yellow color of amniotic fluid 43% fetal distress were recorded. A retrospective Cohort study of 100 pregnant women, full term singleton cephalic presentation, with early and delay rupture of membrane, the result were statistically analyzed with the t student and pearson test, with induction of labor delivered by cesarean section duo to poor progress of labor. During the study period there were a total of 100 women with singleton gestation delivered by cesarean section among these cases, early rupture of membrane were 44 % of cases, late rupture of membrane were 39 % , associated with 23 % of green to yellow color of amniotic fluid, 43% fetal distress. Early rupture of membrane is an independent risk factor for cesarian delivery in singelton pregnant women, it has been theorized that spontaneous early rupture of membrane is more likely in women with cefalopelvic disproportion.*

**KEYWORDS:** *early rupture of membrane, late rupture of membrane, dystocia, fetal distress*

**1. Introduction**

Early rupture of membrane was defined; as spontaneous rupture of membrane before the onset of active Labor (rupture of membrane) before a cervical dilatation of 4 cm during the course of labor, and late rupture of membrane: was defined as rupture of membrane occurring after the onset of active labor (i.e. rupture of membrane) occurring at a cervical

dilatation of 4 cm or more either spontaneous or artificial). In cases with pre – labor rupture of membrane, defined as rupture of membrane in the absence of labor, timing of rupture of membrane and the nature of rupture of membrane (spontaneous or artificial) are routinely documented in medical record [1,2].

Prelabor rupture of the membranes, which is defined as rupture before the onset of labor,

complicates 5 to 10 percent of all pregnancies. [1,2]

Prelabor rupture of the membranes has received considerable attention in the obstetrical literature and deservedly so, for it is directly responsible for the neonatal infections, approximately one third of all preterm deliveries. At least 60 percent of cases of premature rupture of the membranes occur in pregnant women at term [1,3], however, and even at this length of gestation, clinical management is surprisingly controversial.

The specific dilemma involves how best to treat patients with prelabor rupture of the membranes and cervixes that are unfavorable for the induction of labor. If induction is attempted with intravenous oxytocin, the frequency of failed induction and subsequent cesarean delivery approaches 30 to 40 percent, and protracted labor increases the risk of maternal and neonatal infection. Conversely, if women are observed expectantly to allow the cervix to ripen and labor to begin spontaneously, infection or prolapsed or compression of the cord may occur. These conditions, in turn, lead to an increased frequency of cesarean delivery. If women are hospitalized for expectant management, increased expense is incurred, clearly an undesirable result in today's environment.

Historically, the approach to early rupture of the membranes in women at term was based on a series of alarming reports published from 1960 to 1970 showing a substantial increase in the frequency of maternal and neonatal infection when the interval between the rupture of the membranes and delivery was prolonged. Collectively, these reports argued strongly in favor of immediate induction of labor rather than expectant management. However, none of these early studies examined maternal and neonatal outcomes in the specific group of women at term who had cervixes unfavorable for the induction of labor.

Such women had a reduced frequency of cesarean delivery when they were allowed to enter

labor spontaneously rather than undergo immediate induction. Expectant management resulted in a lower frequency of both cesarean delivery and intrapartum infection than did the practice of immediately inducing labor.

An initial period of observation with induction with oxytocin if spontaneous labor did not begin within 24 hours of rupture of the membranes. Women who entered labor spontaneously within the period of observation had the best maternal and neonatal outcomes. Women who were observed initially for 24 hours and then had labor induced despite having an unfavorable cervix had the highest frequency of infection, and their infants were the most likely to receive antibiotics for suspected sepsis [3].

A delay of 72 hours to await the spontaneous onset of labor offered no clinical benefit to the mother or infant and increased the duration and expense of hospitalization.

## 2. Material and Methods

During the study period April 2010 to April 2013, a retrospective Cohort Study of 100 pregnant women delivered by lower segmental cesarean section, cause dystocia including cases 60 nulipare, and 40 cases of multiparas, a Cohort term Singleton pregnancy, cephalic pregnancy, single fetus had no contraindications for vaginal delivery with mean range of maternal age 17-35, gestational age 37- 42, the range of parity 0-4, body mass index(kg/m<sup>2</sup>) 20.34-30.67, neonatal birth weight (kg) 2.75-4, (table I).

Latent phase duration 9±3 hour for primiparas and 7,5±3 hour for multiparas, Bishop score for primipares 4.12±2.20, for multipares 3.85±2.03, P value 0.552, cervical length for primipares 28.02±4.79, for multipares 27.95±5.51, P value 0.949. After admission full history including duration of pregnancy, obstetrical and systemically examination

done .

In this Cohort study the rupture of the membrane was diagnosed by history of a gush of fluid from the vagina or continued leakage of fluid from vagina and demonstration of membranes rupture has to be made by sterile speculum examination visualizing flow of amniotic fluid from the cervical and/or it's pooling in posterior vaginal fornix spontaneously or by fundal pressure and demonstrating alkaline pH of vaginal fluid by litmus paper, a sample of the secretions from the posterior vaginal fornix or cervix was obtained, placed on a slide , air dried and viewed microscopically for farming.

**Table I.** *Clinical characteristics of study group*

	Mean±SD	Range
<b>Maternal age(year)</b>	25.53±5.75	17-35
<b>Parity</b>	1.36±1.04	0-4
<b>BMI (Kg/m<sup>2</sup>)</b>	25.54±1.96	20.34-30.67
<b>Gestational age(wk)</b>	1.56±39.07	37-42
<b>Neonatal birth weight (kg)</b>	0.33±3.26	2.75-4

Farming (crystallization of NaCl in a palm leaf pattern in amniotic fluid usually confirms rupture of membranes. If rupture is still unconfirmed, ultrasonigraphy showing oligohydramnios.

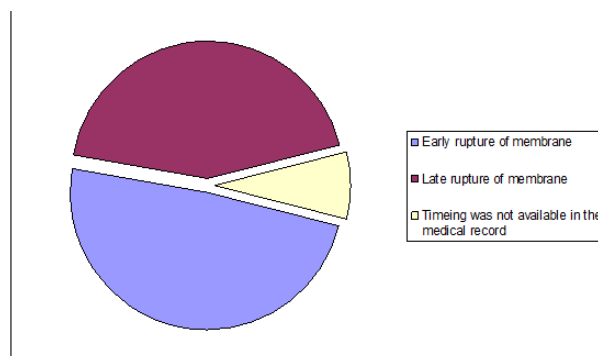
During speculum examination high vaginal swab was collected for culture and sensitivity and cervical dilatation and effacement was assessed at the same time.

Gestational age was determined from last menstrual period and from early ultra sound graph scan.

Labor as augmented with oxytocin drip, but there was arrest in cervical dilatation delivery was finished by lower segmental cesarean section.

### 3. Results

From April of 2010 to April 2013 a retrospective Cohort study included 100 of pregnant women enrolled nullipares and multipares were admitted in Malaxa Hospital, for labor have insufficient uterine contraction for 11% of these cases early rupture of membrane was found 44%, 39% late rupture of membrane 7% timing was not available in the medical record among 100 women (figure 1), associated with 43% developed fetus distress, 23% at cases had green to yellow color of amniotic fluid



**Figure 1.** *Number of case with early and late rupture of membrane*

**Table II.** *Parity and Duration of latent phase of labor, cervical length, and Bishop score at study group*

	Primipares	Multipares	P value
<b>Latent phase duration(hours)</b>	9.05±2.95	7.57±3.03	0.44
<b>Cervical length(mm)</b>	28.02±4.79	27.95±5.51	0.949
<b>Bishop score</b>	4.12±2.20	3.85±2.03	0.552

In our study there were 43% of the presenting case with CTG sings suggestive of fetal distress (table II, III), fetal tachycardia > 160/min, loss of baseline variability, loss of acceleration, recurrent late deceleration, persistent variable deceleration, fetal bradycardia < 100 bpm for more than 30 minutes.

Number of case with early rupture of membrane 44% and late rupture of membrane 39% (table IV).

**Table III.** *Fetal distress in latent and active phase*

Fetal distress	Primipares	Multipares
Latent phase	18	7
Active phase	10	8
<b>Total</b>	28	15

**Table IV.** *Early and late rupture of membrane*

Early rupture of membrane	Late rupture of membrane	Timing was not available in the medical record
44 %	39 %	7 %

#### 4. Discussions

The principal findings of this study of 100 of full term pregnant with painful uterine contraction, had early ruptured of membrane occurred in 44 %, 39% had late rupture of membrane, all 100 cases were delivered by cesarean section due to failure of progress among these cases 43% had fetal distress only 23% cases had meconium, early rupture of membrane could be added as a new risk factor to predict the Likelihood of requiring cesarean delivery.

Several explanations for this relationship between early rupture of membrane and the risk of cesarean delivery early rupture of membrane itself may be reflective of dystocia with cephalopelvic disproportion the entire force of labor converges on the portion of the membranes that overlies the cervix in contracted pelvis that preclude the passage of the fetus, it is possible that early rupture of membrane may reflect the possible mechanism (dystocia) of this relationship increased risk of cesarean delivery, a relative unripened cervix at the beginning of labor

may contribute to relative cefalopelvic disproportion during subsequent labor progression, becoming on abstracte to the descent of fetal head, fetal head may arrest in the pelvic inlet during labor and the uterine contraction forces may focus on the presenting fetal membrane, resulting in early rupture of membrane and resulting in increased risk of cesarean section this relationship between [2,5-8].

The absence of hydrostatic pressure of membranes after rupture of membrane may result in slow progress of labor and a corresponding increased risk of cesarean delivery

Intra amniotic infection or inflammation may result from a longer duration of rupture of membrane in case of early rupture of membrane and are responsible for an increased risk of cesarean contraction due to uterine inflammation it has been suggested that high virulence bacterial infection or chorioaminionitis associated with dystocia [8].

Higher rate of the use of intravenous oxytocin in patient in early rupture of membrane group than in those in late rupture of membrane.

#### 5. Conclusions

Early rupture of membrane during full-term labor is associated with an increased risk of cesarean delivery. Further studies on the possible mechanism of this association and the development of new scoring system using early rupture of membrane for prediction of an cesarean section.

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