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Comparative study on active versus conservative management in preterm premature rupture of membranes at 36 week gestation in Aswan university hospital

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Abstract
Introduction: The chorioamniotic membrane refer to the chorion and amnion which surround and protect the foetus during intra uterine life. The outcome of pregnancy depends in part on the normal development and structural integrity of the chorioamniotic membranes.
The decision to deliver or manage expectantly in cases of PPROM requires an assessment of the risks related to the development of intrauterine infection in those pregnancies managed expectantly compared with the gestational age-related risks of prematurity in pregnancies delivered earlier
Methods: This comparative study include 100 pregnant women with PPROM admitted in Obstetrics and Gynecology Department, Faculty of Medicine, Aswan University, Aswan, Egypt at gestational age 36 weeks selected for the study. Were devided into 2groups Active management (Group A) Expectant management (Group B) all belongs to Inclusion criteria and Exclusion criteria.
Results: A there is a statistically significant difference between group A and group B (P value< 0.005) in group A (there is increase incidence of LSCS rate mostly due to failed induction of labor. About the maternal complications there is a statistically significant difference between group A and group B (P value< 0.005) in group B there is increase incidence of wound infection. Regarding fetal complications there is a statistically significant difference between group A and group B (P value< 0.005) in group A there is increase incidence of respiratory distress syndrome and in group B there is increase incidence of neonatal sepsis and there is a statistically insignificant difference between group A and group B (P value> 0.005) regarding neonatal death.
Conclusion: Careful identification of present or impending complications, and individualizing the management based on gestational age and the presence or likelihood of these complications currently holds bes hopes for optimizing fetomaternal outcome in PPROM cases.

Keywords: amniotic fluid, labour induction, pge2, preterm premature rupture of membranes and preinatal mortality

Introduction

The chorioamniotic membrane refers to the chorion and amnion which surround and protect the foetus during intra uterine life. The outcome of pregnancy depends in part on the normal development and structural integrity of the chorioamniotic membranes [1].

Without any interventions the spontaneous rupture usually occurs near the end of the 1st stage of labour. Premature rupture of membranes (PROM) is defined as the spontaneous rupture of the chorioamniotic membranes with a release of amniotic fluid before the onset of true labour pain [1].

If the chorioamniotic membranes rupture after 37 weeks of gestation it is called term Premature Rupture of Membranes (TPROM). If the rupture of the chorioamniotic membranes (ROM) occur before 37 weeks of gestation is termed as the preterm premature rupture of membrane (PPROM). PROM has an incidence of about 10% of all pregnancies and is a significant event as it can cause maternal complications, increased operative procedures, neonatal morbidity and perinatal mortality [2].

There are some authors like Neuhaus W *et al.* who report a significant increase in the rates of neonatal and maternal infection and foetal distress if delivery occurs over 24 hours after PROM [3].

Immediate induction of labour has shown to reduce the duration of hospitalization and occurrence of neonatal and maternal morbidity [4].

Also, with increasing time since the rupture of, membranes to delivery, a higher incidence of histological chorioamnionitis was observed in some studies [5].

Some authors like Cammu H *et al.* believe that the expectant management of PROM at term does not increase perinatal and maternal morbidity, and that an aggressive attitude to PROM with immediate induction of labour leads to an increased caesarean section (LSCS) rate [6].

Some obstetricians believe that waiting for labour to begin spontaneously is preferable for mothers if there is no evidence of foetal or maternal compromise, since the risk of LSCS may be lower [7].

The decision to deliver or manage expectantly in cases of PPROM requires an assessment of the risks related to the development of intrauterine infection in those pregnancies

managed expectantly compared with the gestational age-related risks of prematurity in pregnancies delivered earlier [8].

A retrospective series examining neonatal outcome following cases with PPROM between 32 weeks and 36 weeks showed that the specific gestation for reduced morbidity was 34 weeks. The incidence of respiratory distress syndrome (RDS) and the length of hospital stay were reduced in infants delivered after 34 weeks of gestation [9].

The present study is being planned to compare the efficacy of active management and expectant management in patient of PPROM at 36 week on their fetomaternal and perinatal outcome.

Methods

This comparative study include 100 pregnant women admitted in Obstetrics and Gynecology Department, Faculty of Medicine, Aswan University, Aswan, Egypt with spontaneous rupture of membranes (SROM) at 36 completed weeks but not in labor meeting the inclusion and exclusion criterion was included.

Methods of collection of data

- A study of 100 cases of PPROM. PPROM was confirmed by sterile speculum examination of vagina
- Detailed history was taken as per study proforma
- General, abdominal and obstetric examination was carried out after admission.
- Routine lab and specific investigations was done including and high vaginal swab for culture and sensitivity was sent on admission
- Those who met the eligibility criteria are invited to voluntarily participate in the study. Written informed consent was taken after explaining the aims and procedures.
- All the patients irrespective of duration of PPROM was given injectable antibiotics till delivery.
- Patients were randomly assigned to Group A (Active management) and Group B (Expectant management) 50 in each group

Inclusion criteria

- Singleton pregnancy
- Vertex presentation
- Bishop score ≤5
- Absence of active labor

Exclusion criteria

- Previous cesarean or major uterine surgery
- Cephalo-pelvic disproportion
- Oligohydramnios
- Patient with fetal distress
- Pregnancy associated with complications like PIH, GDM, = anemia, multiple pregnancies, Rhincompatibility, placenta previa, heart disease, asthma
- No features of chorioamnitis

Active management (Group A)

After initial assessment, in the immediate induction group labor was induced with induction group was with PGE2 doses according to patient parity. Depending on progress of labor, augmented with oxytocin drip if required.

- Patient were monitored for any hyperstimulation or tachysystole or hypertonus associated with fetal distress.
- Labor induction was considered successful, if women delivered within 24 hours of initiating induction method or if there was a definite change in cervical score after hours of induction.
- Any surgical intervention and cause for it was evaluated. Any complication arising during induction, labor or after delivery was noted. Maternal and fetal monitoring was done by using partographs.
- Immediate fetal outcome was monitored by the help of APGAR score and neonatology specialist.

Expectant management (Group B)

- Patients was kept under constant supervision. Maternal pulse, B.P and temperature was recorded 4th hourly. Patients were particularly observed for symptoms and signs of chorioamonitis.
- No P/V examinations was carried out. P/V whenever required was done maintaining strict aseptic measures.
- Patients left for spontaneous labor till 37 week If patient fails to go into labor reassessment of cervical findings was done and labor was augmented with oxytocin or induced as group A depending on Bishop score.
- Patients were meticulously monitored during induction and labor as for group A cases.

Statistical analysis

All relevant data will be compiled and entered into computer using computer-based software SPSS for appropriate analysis. Quantitative data will be analyzed by proportion and Chi square test at $p<0.05$ level of significance.

Results

Age distribution in both groups are not statistically insignificant. Mean age distribution in group A 28±6 is and mean age distribution in group B 27±6 is

Table 1

Item	Group A Average ± STD	Group B Average ± S*T*
Maternal age	28±*6*	27±*6*

Table 2: Parity

Item	Number Percent Group A	Number Group B	Percent
Primigravida	15 30%	17	34%
Multigravida	25 50%	28	56%
Grand Multipara	10 20%	5	10%
Total	50 100%	50	100%

About the patient parity in group A primigravida were 15 with incidence 30

% , multigravida 25 with incidence 50% and grand multipara 10 with incidence 20% .But in Group B A primigravida were 17 with incidence 34% , multigravida 28 with incidence 56% and grand multipara 5 with incidence 10%

Table 3: Interpretation of Group A.

a)

PROM to delivery interval in hours	Number	Percent
<24hr	2	4%
24-72 hr	7	14%
>72hr	41	82%
Total	50	100%

b)

Mode of delivery	No. of patients (n=50)	Percent
Vaginal delivery	19	38%
LSCS	31	62%
Total	50	100%

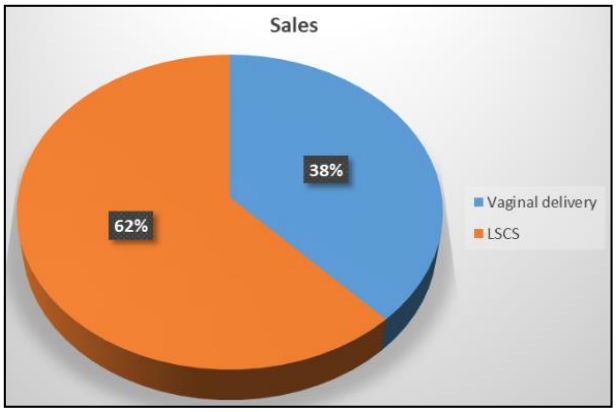

Fig 1

c)

Maternal complications	Number	Percent
Puerperal sepsis	**3**	**6%**
Wound infection	3	6%
chorioamionitis	2	4%

d)

Fetal complications	Number	Percent
Respiratory distress syndrome	11	22%
Neonatal sepsis	5	10%
Neonatal death	3	6%

Table 4: Interpretation of Group B.

a)

PROM to delivery interval in hours	Number	Percent
<24hr	4	8%
24-72 hr	8	16%
>72hr	38	76%
Total	50	100%

b)

Mode of delivery	No. of patients (n=50)	Percent
Vaginal delivery	28	56%
LSCS	22	44%
Total	50	100%

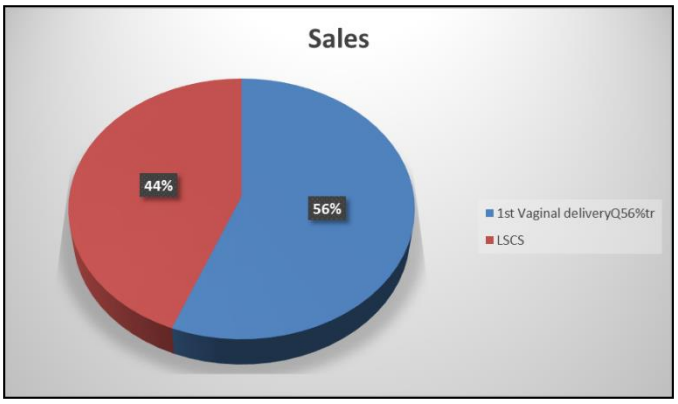

Fig 2

C)

Maternal complications	Number	Percent
Puerperal sepsis	5	10%
Wound infection	10	20%
chorioamionitis	3	6%

d)

Fetal complications	Number	Percent
Respiratory distress syndrome	6	12%
Neonatal sepsis	9	18%
Neonatal death	3	6%

As regard mode of delivery there is a statistically significant difference between

Group A and group B (P value< 0.005) in group A (there is increase incidence of LSCS rate mostly due to failed induction of labor . About the maternal complications there is a statistically significant difference between group A and group B (P value< 0.005) in group B there is increase incidence of wound infection . Regarding fetal complications there is a statistically significant difference between group A and group B (P value< 0.005) in group A there is increase incidence of respiratory distress syndrome and in group B there is increase incidence of neonatal sepsis and there is a statistically insignificant difference between group A and group B (P value> 0.005) regarding neonatal death.

Discussion

Management of PROM remains controversial and challenging. Controversy surrounds the role of antibiotics, induction and expectant management. It complicates approximately 8% of term pregnancies [10].

Risk of complications is reduced in PROM when antibiotic prophylaxis is used [11].

To avoid complications labour is usually induced once PROM is confirmed. Induction of labour in a patient with unfavourable cervix still remains a challenge. Different methods of induction exist, of which prostaglandins are renowned for cervical ripening and myometrial stimulation. However, there remains the risk of increased caesarean section due to either failure of induction or hyperstimulation [12].

In developing countries like Eygypt there is a higher incidence of perinatal morbidity due to the poor resource setting. Hence use of proper asepsis, antibiotics and induction protocol become necessary to decrease the morbidity.

PROM is an enigmatic condition. Diagnosis and management of PROM is complex [13].

In our study group A had a mean age of 28±6 and groupB a mean age of 27± 6 which is comparable to other studies Kodkany BS *et al*. and Devi A *et al.*, they found that the commonest age group among PPROM patients were 20-24 years (35%) (14)(15). According to various studies, with increasing maternal age the risk of PROM decreases [16].

In the present study increased cases of PPROM were observed in cases of multigravidas more than primigravidas which is in agree with many of the studies, multiparity is a risk factor for PROM due to long standing infection, trauma to cervix and patulous os [17]. Caesarean section deliveries were more in the groupA (active manegment group). In this study, the caesarean section rate was significantly higher in group A compared to group B (62% versus 44%, P value = 0.049, significant). In this aspect, our inference was different from that of Krupa *et al.* [12] and Alcalay *et al.* [18] who showed similar rates of vaginal and caesarean deliveries between the two groups. The results of Poornima *et al.* [19] were comparable to that of the present study. The difference in Caesarean section rate was largely due to the increased incidence of labour abnormalities and failed induction in the immediate induction group. This is also the inference of Alcalay *et al.* [18]

In the present study increased cases of wound infection among group B in comparison with group A but the incidence of chorioamionitis were the same in both groups this results disagree with John and Sowmyanarayanan [1] they found that

There was no difference in maternal and neonatal infectious morbidity between the two groups. This may be due to the use of prophylactic antibiotics. Maternal morbidity was analysed between the two groups by taking into consideration the number of patients who had urinary tract infection.

In the present study increased cases of respiratory distress syndrome among group A more than group B and there is a statistically insignificant difference between group A and group B (P value> 0.005) regarding neonatal death which is 6% this is disagree with other studies Arnab and Sanhita [20].

Found that perinatal mortality (9.8%) closely simulates the incidence reported by Gunn GC in his series [21]. Whereas Taylor ES [22] reported lowest PMR as 1.5%. The wide variation in perinatal mortality was due to inclusion of PROM cases at different durations of gestation including preterm and pre-viable PROMs and availability of facilities in the respective neonatal care units. Sanyal MK [23] reported the perinatal mortality as 4.2%.

Conclusion

The following observations were made from the present study.

Though there was no incidence of maternal mortality, but the incidence of puerperal maternal morbidities, as puerperal sepsis and wound infection more in expectant group than active management group.

Perinatal Mortality Rate was the same in both expectant group and active management group Hence it may be concluded that careful identification of present or impending complications, and individualizing the management based on gestational age and the presence or likelihood of these complications currently holds best hopes for optimizing fetomaternal outcome inP PROM cases.

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