A STUDY ON ACTIVE VERSUS EXPECTANT MANAGEMENT AND PERINATAL OUTCOME OF PRETERM PREMATURE RUPTURE OF MEMBRANES BETWEEN 32-37 WEEKS OF PREGNANCY

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CERTIFICATE

This is to certify that the dissertation entitled **"A STUDY ON ACTIVE VERSUS EXPECTANT MANAGEMENT AND PERINATAL OUTCOME OF PRETERM PREMATURE RUPTURE OF MEMBRANES BETWEEN 32-37 WEEKS OF PREGNANCY"** submitted by **Dr.Vijayalakshmi N** in the Institute of Social Obstetrics, Govt Kasturba Gandhi hospital (Madras Medical College) Triplicane , Chennai, in partial fulfillment of the university rules and regulations for award of MS degree in Obstetrics and Gynaecology under my guidance and supervision during the academic year2011-2014.

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I solemnly declare that this dissertation entitled **"A STUDY ON ACTIVE VERSUS EXPECTANT MANAGEMENT AND PERINATAL OUTCOME OF PRETERM PREMATURE RUPTURE OF MEMBRANES BETWEEN 32-37 WEEKS OF PREGNANCY"** was done by me at The Institute Of Social Obstetrics, Govt Kasturba Gandhi Hospital, Madras Medical College during 2011-2014 under the guidance and supervision of, **Prof. Dr. S. BABY VASUMATHI MD. DGO.** This dissertation is submitted to the TamilNadu Dr. M.G.R. Medical University towards the partial fulfillment of requirements for the award of M.S. Degree in Obstetrics and Gynaecology.

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ABBREVIATIONS

FHR	- Fetal Heart Rate
FLM	-Fetal Lung Maturity
GA	-Gestational Age
GBS	-Group B Streptococcus
HMD	-Hyaline Membrane Disease
IVH	-Intra Ventricular haemorrhage
LN	-Labour Natural
LMP	-Last Menstrual Period
LSCS	- Lower Segment Caesarean Section
MMP	-Matrix MetalloProteinaeses
NEC	- NectrotisingEnterocolitis
NICU	-Neanatal Intensive Care Unit
PROM	-Premature Rupture Of Membranes
PPROM	-Preterm Premature Rupture Of Membranes
RDS	-Respiratory Distress Syndrome
ROM	-Rupture of Membranes
ROS	-Reactive Oxygen Species
TIMP	-Tissue Inhibitor MetalloProteinaeses
USG	-Ultra Sono Gram

A Study on Active Versus Expectant Management and Perinatal Outcome of Preterm Premature Rupture of Membranes Between 32-37 Weeks of Pregnancy

ABSTRACT

INTRODUCTION:

PPROM is defined as a rupture of the amniotic membranes before 37 weeks of gestation and before the onset of labour. PPROM is one of the high risk factor leading to approximately one third of preterm births and it complicates about 3% of pregnancies. It is associated with many neonatal and maternal complications including neonatal sepsis, hyaline membrane disease (HMD), placental abruption, and eventually fetal death.

OBJECTIVES:

1)To study active versus expectant management in preterm premature rupture of membranes (PPROM) between 32-37 weeks of pregnancy.2)To estimate the prevalence and identify the risk factors of preterm premature rupture of membranes. 3) To study the perinatal outcome of preterm premature rupture of membranes.

MATERIALS AND METHODS:

This study was conducted in Govt. Kasturba Hospital, Triplicane, Madras Medical College, Chennai from December2012 to November 2013 with ethical committee approval. 108 patients with gestational age of 32-36 completed

weeks (37 weeks) with confirmed ROM, Singleton pregnancy, primi and multigravida in the age group between 15-35 years were randomly allocated to active and expectant management groups. The admission, management procedures and events during delivery and puerperium and neonatal outcome were studied.

RESULTS:

The incidence of PPROM was 3.56%. It was high in 34-36 weeks of gestation. The mean MRO duration during admission was 14.91 hours, admission to delivery interval 15.81 hours. The incidence of LSCS in active management is 32.12 % whereas in expectant group is 16.9%.The duration of mother hospitalization and post-operative complications like fever, abruption placenta were not statistically associated with active and expectant management (p>0.05). A statistically significant (p=0.007) differentiation in neonatal hospitalization, RDS were noted in both groups. Admission delivery interval was significant in both 32-34 as well as 34-36 weeks preterm PPROM.

CONCLUSION:

The incidence of PPROM is comparatively low because of improved living conditions and regular obstetric care. Active management by means of induction of labour between 34-36 completed weeks and expectant management

between 32-34 weeks is safer for mother and fetus in pregnancies complicated by PPROM.

CONTENTS

INTRODUCTION

Introduction

Pregnancy is considered a unique, physiologically normal episode in a women's life. While most pregnancies and births are uneventful, all pregnancies are at risk. Around 15% of all pregnant women develop a potentially life-threatening complication which in turn require a major obstetrical intervention to survive.[1]

Labour is a naturally occurring phenomenon which usually starts on its own. Labour is defined as the spontaneous onset of regular painful uterine contractions associated with the progressive effacement and dilatation of the cervix and descent of the presenting part, with or without a 'show' or ruptured membrane.[2]

Preterm Labour (PTL) is defined by World Health Organization (WHO) as the onset of labour after the period of viability that is after 28 weeks of gestation and before 37 completed weeks or 259 days of pregnancy .It is estimated 15 million preterm births occur worldwide. Pre-term birth is associated with significant perinatal morbidity and mortality rates. About 35% of preterm birth follows preterm pre-labour rupture of membrane. The early detection of preterm labour or preterm rupture of membranes in traditional antenatal care is problematic because symptoms or signs may vary only a little from the normal physiological symptoms and signs of pregnancy.[3] Hence detailed guidelines required to screen or manage pre-term labour.

More than 1 in 10 of the world's babies born in 2010 were born prematurely, making an estimated 15 million preterm births (defined as before 37 weeks of gestation), of which more than 1 million died as a result of their prematurity. Preterm birth is divided into several categories, based on weeks of gestational age:

1) Extremely preterm (<28 weeks)
2) Very preterm (28 to <32 weeks)
3) Moderate to late preterm (32 to <37 weeks).

   Moderate preterm birth may be further split to focus on late preterm birth (34 - <37 completed weeks).

Preterm birth is a syndrome with a variety of causes which can be classified into two broad subtypes:

(1) Spontaneous preterm birth (spontaneous onset of labour or following pre-labour premature rupture of membranes (PPROM)) and

(2) Provider-initiated preterm birth (defined as induction of labour or elective caesarean birth before 37 completed weeks of gestation for maternal or fetal indications (both "urgent" and "discretionary"), or other non-medical reasons. Around 60% of preterm births in the world occur in Africa and South Asia, and it is truly a global problem. India had 3 519 100 preterm birth in 2010.[4]

Spontaneous rupture of membranes usually coincides with labour. Membrane rupture at term without spontaneous uterine contractions complicates approximately 8 percent of pregnancies. Induction implies stimulation of

contractions before the spontaneous onset of labour, with or without ruptured membranes. So an orderly and systematic approach to labour management results in better maternal and perinatal outcomes.[5]

Premature rupture of membranes (PROM) refers to the loss of integrity of membranes before onset of labour, with resulting leakage of amniotic fluid and establishment of communication between the amniotic cavity and the endo cervical canal and vagina. PROM occurs in approximately 5–10 % of all pregnancies, out of which around 80 % occur at term (term PROM).[6]

PPROM is defined as a rupture of the amniotic membranes before 37 weeks of gestation and before the onset of labour. PPROM is one of the high risk factor leading to approximately one third of preterm births and it complicates about 3% of pregnancies. It is associated with many neonatal and maternal complications including neonatal sepsis, hyaline membrane disease (HMD), placental abruption, and eventually fetal death. The risk of fetal death in PPROM is 1 to 2%. In addition, PPROM puts the mother at risk for infection (chorioamnionitis) and premature delivery, and increases the risk of lower segment Caesarean section delivery.[7]

Preterm pre-labour rupture of the membranes (PPROM) is an important clinical problem and the management option creates a dilemma for the obstetrician. On the one hand, waiting for spontaneous onset labour

(Expectant line of management) may lead to an increase in infectious disease for both mother and child, whereas on the other hand induction of labour (Active line of management) leads to preterm birth with an increase in neonatal morbidity and a possible rise in the number of instrumental deliveries.[8]

The aim of this study is to systematically compare the induction of labour and expectant management in case of preterm premature rupture of membranes between 32 and 37 weeks in terms of neonatal sepsis and RDS, maternal health, health-related quality-of-life and costs.

REVIEW OF LITERATURE

Review of Literature

Definition

ROM: Spontaneous rupture of membranes (ROM) is a normal component of labour and delivery.

PROM: Premature rupture of membranes (PROM) refers to rupture of the fetal membranes prior to the onset of labour from 37 to 42 weeks of gestation. Since it ruptures before the onset of labour it is also referred to as pre-labour rupture of membranes. PROM can occur either at term or preterm (<37weeks). Prolonged PROM refers to PROM greater than 24 hours, and is associated with an increased risk of ascending infection.

PPROM: Preterm PROM defined as premature rupture of membranes occurring prior to 37 weeks of gestation.[9]

Latent period- Time from rupture of the membranes up to delivery.

Latent   - Time from rupture of the membranes to the beginning of the

interval   active phase of labour.[10]

Incidence

The incidence of PPROM is

0.5% before 26weeks

1.0% between 26 and 34 weeks

1.5% between 34 and 37 weeks.

It accounts for about one fourth of all cases of ruptured membranes. PPROM is responsible for close to 40% of preterm births.[11]

Structure of Fetal Membranes

In humans the foetal membranes are composed of the amnion and the chorion. The amnion is the innermost of the two human fetal membranes and, as such, it is in contact with the contents of the amniotic sac which includes the amniotic fluid, the foetus and the umbilical cord. The chorionic membrane, which is attached to the outer surface of the amniotic membrane, separates the amnion from the decidua and the uterus .[12]

Structure of Amnion

The Amnion is derived from ectoderm and it is composed of two layers – inner and outer layer. The inner layer lies near to amniotic cavity and outer layer lies near to myometrium of uterus. The amnion is composed of five layers of cells and measures around thickness of 0.02 to o.5 cm. It is avascular and nerveless. The cells are cuboidal to columnar in shape and undergo squamous cell metaplasia at areas of mechanical stress. The amnion has got a single layer of epithelial cells which is strengthened by the cells' surface chromosomes and microvilli inter-digitations. The amnion overlies a

basement membrane composed of type IV and V collagens that attach to a collagenous extracellular matrix consisting predominantly of type I and type III collagen, reticular fibrils and fibroblasts.

Structure of Chorion

The Chorion is derived from mesoderm that originates from the trophoblastic mass. The trophoblastic villi undergo atrophy as the embryo and gestational sac grow away from the implantation site towards the opposite wall of the intrauterine cavity. The cells are arranged in 2-10 layers and are polygonal in shape. The thickness of Chorion is 0.4 mm. In contrast to the amnion the Chorion is vascular, and it carries the nutrients in its vessels. The amnion receives its nutrients from chorion by the process of diffusion.

Etiopathogenesis

PPROM is a multifactorial in nature. The fetal membranes are composed of the amnion and chorion which are bound together by different layers of extracellular matrix. This matrix is the key factor for maintaining the elasticity and tensile strength of fetal membranes. The tensile strength of the membranes which in turn acts as a physical and functional boundary for the growing fetus during pregnancy. [13] If the extra cellular matrix is intact,

elasticity and tensile strength of the fetal membranes is at its maximum; hence any process that interferes or weakens the elasticity and tensile strength of the matrix metallo proteinases (MMPs) increases the risk of PPROM.

Risk Factors

-Infection of the woman's genital tract (nonspecific vaginosis, Trichomonasvaginalis, Mycoplasma hominis, Chlamydia trachomatis, Neisseria gonnorhoe, streptococci of group B (GBS), other sexually transmittable diseases(STD)

-PPROM in previous pregnancies (21%) [14]

- Premature uterine activity

- Multiple pregnancies

- Antepartum haemorrhage

- Incompetence of cervix

- Polyhydramnios

- Placenta praevia and other placental disorders

- Congenital anamolies of uterus

- Condition after interventions on the cervix (conization, cerclage)

- Coitus

- Low socio-economic status related to poor nutrition

- Cigarette smoking

- Maternal diseases like α1 AT deficiency and Ehlers - Danlos syndrome

- Maternal vitamin and mineral deficiencies.[15]

Premature rupture of membranes is multifactorial in nature. In any patient with PPROM, one or more pathophysiologic processes may be evident. The most common risk factor for PPROM is infection. [16] The commonest germs associated in complicated cases of PPROM are: Chlamydia, Mycoplasma, group B Streptococcus.[10]

Choriodecidual infection or inflammation appears to play an important role in etiology of PPROM, particularly at early gestational ages. In PPROM women the membrane collagen content has been decreased with increasing gestational age. In support of this, there is an increase in amniotic fluid matrix metalloproteases (1, 8, and 9) as well as a decrease in tissue inhibitors of matrix metalloproteases (1 and 2) have been identified among women with preterm PROM.[16]

Collagen is produced by fibroblasts and degraded by a family of enzymes known as matrix metalloproteinases (MMPs). During the process of labour, the membrane strength weakens in response to an up-regulation of matrix metalloproteinase-9. The action of MMPs is normally controlled by tissue-specific inhibitors of their activity (TIMPs). In PPROM, there will be

disruption of the balance between MMP and TIMP activity, which is the final event that results in collagen degradation and eventual membrane rupture.

Menon et al showed that following infection there will be increase in local inflammatory mediators such as tumour necrosis factor-alpha (TNF- α) and interleukins-1, 6, and 8 and which in turn up-regulate MMPs and inhibit TIMPS leading to degradation of collagen and eventual membrane rupture.[17]

An another study by Mercer et al shows the association of decreased membrane collagen content in preterm PROM and with increasing gestational age. The same study shows the presence of increased amniotic fluid matrix metalloproteases (1, 8, and 9) decreased tissue inhibitors of matrix metalloproteases (1 and 2) in women with preterm PROM.[18]

The risk factors of PPROM acts through different pathways that up-regulate the inflammatory process. Infection is the major risk factor that leads to recruitment of activated neutrophils and macrophages. These activated cells have the capacity to kill bacteria by releasing reactive oxygen species (ROS) that destroy the bacterial cell wall. The ROS released and hypochlorous acid is also capable of damaging the fetal membrane directly and acts as a signal for the up-regulation of MMPs.

Smoking and cocaine abuse generate ROS which induces tissue damage and inflammation via lipid peroxidation.[16] Subchorionic hemorrhage that is

manifested as vaginal bleeding stimulates inflammation and membrane damage by at least three different pathways. First, the iron released from the lysed erythrocytes will act as a catalyst to generate the hydroxyl radical, a potent and short- lived ROS. Second, thrombin in the clot directly enhances decidual cell production of MMP-3.[19] Finally, platelets in the clot stimulate the release of chemoattractants, via the CD-40 ligand system, that recruit inflammatory cells to the site of bleeding. [20]

Micronutrients and infection and inflammation during pregnancy:

Preterm PROM has been attributed to the effects of matrix-degrading enzymes on the fetalmembranes, and reduction-oxidation status may affect the activity of matrixmetalloproteinase 9, an enzyme responsible for membrane rupture. Studies showed the dose response relationship between the plasma ascorbic acid concentration and prevalence of premature rupture of membranes, in patients with poor nutritional status.[21]

Vascular lesions of the placental bed have been described in patients with PPROM, including failure of normal physiologic transformation of the decidual segment of the spiral arteries, thrombosis, and atherosis. Studies have shown an increased incidence of maternal vascular lesions in patients with preterm premature rupture of membranes than normal pregnancies (35.1% PPROM patients vs. 11.8% in normal pregnancies).[22]

There are studies showing, relaxin as one of the component in the mechanism of membrane rupture. Laboratory experimentation has shown the relaxin induced collagenase activity when incubated with membranes in vitro.[23]

Bogic et al study shows the overexpression of relaxin gene in the membranes PPROM women when compared with those from women in preterm labour with intact membranes or from women not in labour. [24] Some studies have indicated that the relaxin mediated pathway of PPROM is independent of infection.[25]

Age

The incidence of PPROM is more in younger age group. It is 43.2% in 26–30 years age and 23.3% in > 30 years group. [26] It was seen to be common among patients who were young (15–25 years) 58.8%.[27]

Diagnosis of PPROM

The diagnosis of PPROM requires a thorough history, physical examination, and selected laboratory studies. Patients often report a sudden gush of fluid with continuous leakage .The history of patient alone has the sensitivity of 90% for diagnosing PPROM.[28]

Speculum Examination

Rupture of membranes was assessed clinically with a sterile speculum examination and visualising the passage of amniotic fluid through the cervical os and pooling of the amniotic fluid in the posterior fornix of the vagina. If there is no pooling of fluid in vagina the patient is asked to perform valsava maneuver such as coughing or fundal pressure is given to evaluate the leakage of fluid from the cervical os. Whenever preterm PROM is suspected, it is always important to avoid performing a digital cervical examination because such examinations have associated with increase morbidity. [28]

If rupture of membranes cannot be determined by a Speculum examination, other tests like the nitrazine paper test and the fern test may be performed to diagnose PPROM. The combination of the patients history, speculum examination, the nitrazine test, and the fern test for evaluating a patient with symptoms suggestive of PPROM yields a sensitivity of 93.1 %(Gold et al).[29]

Nitrazine Test

The pH of vagina during pregnancy 4.5 to 5.5 and pH of amniotic fluid is 7 to 7.5. pH of vaginal secretions would rise to 6.0 when it is contaminated by escaping amniotic fluid causing the nitrazine paper to turn from yellow to blue in colour. The colour of the paper remains yellow or changes to olive

yellow (pH 5.0-5.5) when the membranes are intact. The nitrazine test may give false positive results if contaminated with semen, blood, some lubricants, or if a vaginal infection is present. The nitrazine test has got 16.2% false positive and 12.7% false negative results. Like nitrazine paper, litmus paper is also used to detect changes in vaginal pH. When vagina is bathed with amniotic fluid red litmus paper turns into blue colour.

Fern Test

Ferning occurs due to drying of salts that present in amniotic fluid. This test is done by collecting fluid from posterior fornix or sidewalls of vagina and allowed to dry on a glass slide for 10 minutes the microscopic appearance of ferning or arborisation pattern indicates positive test. In 1944 this ferning or arborisation was used for the first time to diagnose PPROM with sensitivity of 96-99% and specificity of 98-99% [10]. A false positive result may obtain due to presence of cervical mucous and vaginal blood.[28] The fern test gives 4.4% false positive and 4.8% false negative results .[30]

Fetal Fibronectin

Fetal fibro nectin is an extra cellular glycoprotein secreted by chorionic tissue at maternal and fetal interface and it is present in large quantities in amniotic fluid. It can be detected in ectocervix of vagina by ELISA with an FDC-6 monoclonal antibody. A cut off value of 50ng/ml is considered positive. The

sensitivity and the specificity of fetal fibronectin in diagnosing PROM were 94.5 and 89.1 % .[31] In multiparas, a positive cervico vaginal fetal fibronectin test was also associated with PPROM. Nulliparas with a positive fetal fibronectin and a short cervix had a 16.7% risk of preterm birth because of PPROM, whereas multiparas with a previous history of PPROM, a short cervix, and a positive fetal fibronectin had a risk of 25 % in PPROM.[32]

Dye Test

It is an USG guided invasive test, mainly used for PPROM. The main indication of this test is in women with clinical history consistent with PPROM and negative nitrazine and fern test. This test consists of intraamniotic injection of 1 ml of indigo carmine diluted with 9 ml of distilled water. A tampon is placed in vagina and examined visually after 30 minutes. The presence of blue discolouration in tampon is diagnostic of PPROM. Methylene blue dye is not used now a days because of the risk associated with hyperbilirubinemia and haemolytic anaemia in infants.[28, 33]

Amnisure

PAMG -1(Placental microglobulin -1) is a protein secreted by cells of decidual part of placenta. This protein is present in amniotic fluid after rupture of membranes. AMNISURE is a new generation test that detects

PAMG-1 by immunochromatographic method. This is a highly diagnostic test with 99 % of sensitivity and 100% of specificity .[34]

Ultrasound

Ultrasound examination showing oligohydramnios is also used to help confirm the diagnosis of PROM. It also helps in detecting the position of the fetus, presenting part, placental location, estimated fetal weight, and presence of any anomalies.[28] It is also useful in assessing fetal biometry for estimation of gestational age, cervical length, funnelling or dilatation of cervix.

Other tests in PPROM includes

1) Detection of alpha fetoprotein in amniotic fluid
2) Detection of fetal cells in amniotic fluid (Nile blue sulphate test)
3) Microscopic detection of lanuga hair and vernix caseosa in amniotic fluid

Complications of PPROM

I-Neonatal Complications

II-Maternal Complications

Neonatal Complications

Prematurity

It is the most common complication of PPROM. In 80% of women with PPROM delivery occurs within 7 days leading to high perinatal morbidity and mortality.[35]

Hyaline Membrane Disease

It is the most important threat when the baby is delivered before 37 weeks of gestation. The incidence of RDS is estimated to decrease from 15% at 34 weeks to below 1% at 37 weeks' gestation.[36, 37] The incidence of RDS was 22.5% in 33 weeks and 5.8% in 34 weeks. It was relatively low after 34 weeks; it still affects neonates up to 36 weeks with incidence of 10.4% in 35 weeks and 1.5% in 36 weeks. The incidence of respiratory distress was nearly 4.5- fold higher in the preterm patients than in the term patients.[38]

Infection

Fetal infection is the major complication in mid trimester PPROM. Studies on very low birth weight infants has shown that neonates born with infection are associated with increased incidence of sepsis.[39] The incidence of sepsis increases when expectant management is advocated. In case the child is born immediately after PPROM, the risk of sepsis is 2.5%, whereas it increases to

7.5% in case of expectant management.[36] E.coli is the commonest organism responsible for neonatal sepsis .The incidence of sepsis is 36.4% at 24 weeks, 24.4% at 27-28weeks, 1.6% at31-32 weeks and 0.8% 33-34weeks.

Neurological Damage

In 6-12% of PPROM infants hypoxia, inflammation and prematurity contributes to neurological damage (Yoon et al 1999).[40]

Pulmonary Hypoplasia

This occurs when PROM occurs before 26 weeks and the latent period is prolonged for more than 5 weeks. In PPROM the pressure gradient between the amniotic cavity and alveoli is altered. As a result there is a loss of fetal lung fluid into the amniotic cavity, leading to pulmonary hypoplasia. The incidence of pulmonary hypoplasia is 50% at 19 weeks, 10% at 25 weeks and rare after 26 weeks.[41]

Cerebral Palsy

It is a long term sequelae of PPROM especially in patients complicated with chorioamnionitis, intra ventricular haemorrhage, intrapartum fetal acidosis and hypoxia.[42]

Musculoskeletal Deformities

Facial and skeletal deformities can occur due to prolonged PROM. Deformities in prolonged PROM are due to severe oligohydramnios. Like pulmonary hypoplasia, most of these cases occur in PPROM before 26 weeks and after a latency period of 5 weeks or more.[43]

Maternal Complications

Acute chorioamnionitis

The incidence of Chorioamnionitis in all pregnancies is 0.5% to 1% and PPROM patients are 0.5% to 71%. The incidence of chorioamnionitis in PPROM increases with decreasing gestational age and with the duration of membrane rupture.[38]

Diagnosis of chorioamnionitis is based on the clinical presentation

-Maternal fever > 38° C with any 2 of the following:

- Maternal tachycardia (> 100 bpm)

-Fetal tachycardia (>160 bpm)

- Uterine tenderness

- Offensive vaginal discharge

 - Increased white cell count (> 15 x 109 / L)

- C Reactive Protein >2.7 mg/dl

- Histological examination of placenta and membranes with evidence of acute inflammation may confirm the diagnosis after birth.[44]

The incidence of chorioamnionitis is 58.6% in patients with PROM before 28 weeks whereas the incidence PROM occurring after 36 weeks is less than 10%[45] .The reason for high incidence of acute chorioamnionitis and neonatal infection in PPROM are due to decreased antibacterial activity of amniotic fluid[46,47] . In early pregnancy, the amniotic fluid antibacterial activity is low and it increases with gestational age. Also the immature immunological system of the fetus limits the preterm infants from fighting against infection. Acute chorioamnionitis may present at the time of admission or it may develop during the latency period in women do not have signs of infection at the time of admission. In these cases, the incidence of infection is related to the duration of latency period. Butchers (1964) found that 1.7% of his patients with PROM developed fever within 24 hours, 7.5% between 25-48hours and 8.6% beyond 48 hours. The incidence of histologic chorioamnionitis at 12 hours after rupture of the membranes is 10%, after 24 hours is 30%, after 48 hours is 45%, and after 72 hours is 48%.[14] Ghidini et al., have found that there is no increase in histologic chorioamnionitis with the increase in the duration of latency period.[48] Another factor that predisposes to chorioamniotic infection is internal fetal monitoring. Newton et al determined by logistic regression analysis that the chance of developing chorioamnionitis in patients who had 20 hours of PROM and 3 hours of internal fetal monitoring was

20%. This probability was increased to 40% if the latency period was more than 20 hours and internal fetal monitoring lasted for 12 or more hours.

Subclinical chorioamnionitis

The bacteriologic studies on amniotic fluid by Romero et al has shown that 40% of patients with PPROM during admission are infected ,but only a few patients will develop signs and symptoms of overt infection . Most of the times, uterine contractions are the only symptom of chorioamniotic infection. Other signs of subclinical infections are an absence of respiratory movement in biophysical profile and a change from a reactive to nonreactive pattern in Non Stress Test. It can be detected by the elevated C-reactive protein in blood samples of PPROM patients. Studies have shown that estimation of C-reactive protein was superior to cervical swab culture, placental culture, urine culture, and histology in detecting subclinical infection in cases of PROM.[49]

Placental Separation

The incidence of abruptio placentae is approximately 6% in patients with PPROM which is significantly higher than the 1 in 150 found in patient with intact membranes.[50] Abruption usually occurs in PPROM when there is prolonged and severe oligohydramnios. It usually presents as preterm labour with mild to moderate vaginal bleeding. Fetal demise or disseminated intravascular coagulation due to abruption occurs rarely. The cause for abruption in PPROM patients is due to progressive decrease in intrauterine

surface area, leading to placental detachment. Placental abruption occurs in upto 50% of PPROM prior to 20 weeks gestation (Fortunato et al) [.42]

Postpartum Endometritis

Postpartum endometritis mainly occurs in mid trimester PPROM. It is more common in patients who develop chorioamnionitis and are delivered by caesarean section. The incidence has been reported to be between 15-60%, whereas the reported incidence of postpartum maternal sepsis lies between 0 - 3%.[51]

Role of Corticosteroids

Corticosteroids should be given in cases with preterm PROM between 24 and 32 weeks' gestation to reduce the risk of intraventricular hemorrhage, respiratory distress syndrome, and necrotizing enterocolitis .[28] The National Institutes of Health recommends administration of corticosteroids before 30 to 32 weeks' gestation, assuming fetal viability and with no evidence of intra-amniotic infection. Use of corticosteroids between 32 and 34 weeks still remains controversial. Corticosteroids administration after 34 weeks of gestation is not recommended. It can be administered after 34 weeks if there is evidence of fetal lung immaturity by amniocentesis.

Current ACOG recommendations 2007

A single course of antenatal corticosteroids is recommended for women with PROM before 32 weeks' gestation to reduce the risks of

1) Respiratory distress syndrome

2) Perinatal mortality

3) Other morbidities.[52]

A single course of corticosteroids is recommended for pregnant women 24-34 weeks' gestations that are at risk of preterm delivery within 7 days. If pulmonary immaturity is documented, corticosteroid treatment at 32-33 weeks of completed gestation may be beneficial. Corticosteroid is not recommended before 28 weeks of gestation as there is no sufficient data. A single rescue course of antenatal corticosteroids may be considered if the antecedent treatment was given more than 2 weeks prior, the gestational age is less than 32 6/7 weeks, and the woman is judged by the clinician to be likely to give birth within the next week. However, repeated administrations of more than two courses are not recommended.

Role of Antibiotics

The role of prophylactic antibiotics for patients with PPROM is to reduce the risk of neonatal infections and to prolong the latency period. A few randomized control studies have shown that there is a prolongation of the latency period by 5-7 days, and a reduction in the incidence of postpartum

endometritis and neonatal sepsis.[54,55] Prolonging the latency period is important because FLM improves with increasing gestational age, resulting in reduction in the hospital stay for the new born. It has been found that each day of intrauterine life in preterm fetus will reduce 2-3 days of neonate stay in NICU after birth. The National Institute of Child Health and Human Development trial 25 shows an use of intravenous combination of ampicillin 2 grams and erythromycin 250 mg every six hours for first 48 hours, followed by amoxicillin 250 mg and erythromycin 333 mg every eight hours for the next five days. Co-amoxiclav is not recommended for women with PPROM because of concerns about necrotizing enterocolitis.

NIH Maternal Fetal Collaborative Group and the Oracle I Randomised Trial show that the incidence of severe IVH, pneumonia, neonatal sepsis, and necrotizing enterocolitis are reduced with the use of ampicillin or erythromycin. There is no effect of antibiotics in respiratory distress syndrome. There is no evidence to recommend regarding the duration of antibiotic therapy. It is important that antibiotics given should be effective against GBS and E.coli. Azithromycin can be given if chlamydia is present in culture and Rocephin is added if N.gonorrhoea is present. The most common regimen used is cefazolin 2 g IV every 8 hrs for 48 hrs followed by oral cephalexin 250 mg for 5 days. Recent studies suggested that the results are similar with or without oral therapy.[56, 57]

Tocolytics in PPROM

PPROM is one of the major causes of preterm deliveries and perinatal morbidity; hence the use of tocolysis may be appealing to the obstetrician .However the use of tocolysis in PPROM cases remains controversial. There have been several randomized controlled studies regarding the use of oral tocolytics in PPROM, intravenous tocolytics, and short term and long term tocolysis [58].But all these studies have failed to show decreased perinatal morbidity or improvement in neonatal outcome. However, tocolysis can be useful in women with contractions during admission who may deliver before the glucocorticoid administration. Aggressive tocolysis after PPROM does not prolong the pregnancy or reduce neonatal mortality more than a limited treatment for a few days.[59] There is no clear first line tocolytic drug. The choice of drug should be individualised and is based on the maternal condition, potential side effects of drug and gestational age of the patient. (ACOG 2003)

Management

The initial evaluation of PPROM should include a detailed history taking, a sterile speculum examination to confirm the diagnosis of rupture of membranes. Cervical cultures for Chlamydia trachomatis and Neisseria gonorrhoeae and vaginal cultures for Streptococcus agalactiae should be

obtained. The other laboratory investigations like complete blood count including the total number of white blood cells and differential count and estimation of C - reactive protein should be done. Maternal vital signs should be monitored and continuous fetal monitoring is also done to find out the fetal status. Ultrasonography should be done to establish the gestational age, fetal presentation, fetal weight and amniotic fluid index. The duration of latency period, the mode of management of patient and the maternal and fetal prognosis are dependent on gestational age at the time onset of PROM. Therefore, an accurate assessment of gestational age is an important tool in initial evaluation of PPROM patients. An ultrasound examination done during the first trimester of pregnancy is extremely accurate in the estimation of gestational age.[60] Likewise, a gestational age derived from the second trimester ultrasound does not differ by more than 1 week from the gestational age based on last menstrual period. If the ultrasound derived and the LMP derived estimations of gestational age differ by more than1 week, the gestational age derived by ultrasound will be more accurate and it should be taken for clinical management.[61] It is important to consider that the decrease in amniotic fluid in case of PPROM affects the accuracy of ultrasound measurements and it leads to underestimation of the gestational age.[62]

Speculum examination is used to assess the cervical dilatation instead of digital examination. It has been shown that digital cervical examinations in

PPROM decreases the latency period and increases the chances of infections without providing any additional useful clinical information.[53] It has been found that digital examination of cervix will cause an average decrease of nine days in the latent period.[28]

In certain conditions of PPROM, immediate delivery of the fetus is indicated. These conditions include

1) Chorioamnionitis

2) Advanced labour

3) Fetal distress

4) Placental abruption

5) Non reassuring fetal surveillance.

If there is documented fetal lung maturity either by collecting vaginal fluid or amniocentesis, delivery should be initiated. In a non-cephalic presentation of fetus with advanced cervical dilatation (3 cm or more), the risk of cord prolapse is more and the risk may outweigh the benefits of conservative management and immediate delivery should be considered.

After the initial evaluation of the mother and fetus, if both are found to be clinically stable, expectant management of PPROM can be considered to improve fetal outcome. The most common maternal risk associated with expectant management of PPROM is infection. This includes chorioamnionitis (13-60%), endometritis (2-13%), sepsis (< 1%), and maternal death (1-2 cases per 1000). Placental complications like abruption

(4-12%) and retained placenta or postpartum hemorrhage requiring uterine curettage (12%) can also occur.[53]

The management of PPROM depends on the gestational age at the time of its occurrence. This is due to the difference in the incidence of fetal/ neonatal and maternal complications at different gestational age.

PPROM at 36 Weeks

Women with PROM occurring after 36 completed weeks should be delivered. After 36 weeks there is only a little gain by conservative management when the pregnancy has advanced to the stage at which the pulmonary maturity of fetus is complete or almost complete and there is minimal incidence of Respiratory Distress syndrome.[63]

PPROM between 32 to 36 Weeks

Approximately 50% of the fetuses of women with PPROM between 32 and 36 weeks of gestation will have adequate lung maturity. Spinnato et al found that there is no difference in neonatal outcome between expected management and immediate delivery in 47 patients with premature rupture of membranes before 36 weeks with documented foetal lung maturity. However, they demonstrated an increased risk of maternal infection when expectant management was applied. [36.64] Mercer et al (1993) did a randomised trial in between 32 to 36 weeks and found that there is an increased chance of

chorioamnionitis, prolonged maternal and neonatal hospitalization and prolonged antimicrobial therapy in the neonates of women with expectant group. [65]

The management of women in PPROM between 32 and 36 weeks is matter of discussion among experts. There are several studies favouring immediate induction.[65, 66] Expectant management with steroids and antibiotics decreases the incidence of RDS, which is the most common neonatal morbidity in this group. [16, 67]

Hence the care of these patients should be individualized. Immediate delivery by induction may be the best options in certain conditions like chorioamnionitis, oligohydromnios, non-reassuring fetal cardiac activity, patients in active labour and transverse lie. In women with conservative management should be hospitalised until delivery. Intravenous antibiotics should be given for 48-72 hours followed by oral treatment for 5-7days. Daily electronic fetal monitoring should be done. Patients should be assessed for fever, maternal or fetal tachycardia, foul smelling discharge and uterine tenderness. The role of glucocorticoids in preventing RDS in PPROM woman between 32-36 weeks is controversial. Similarly incidence of IVH is rare after 32 weeks.

The main benefit of the conservative management is prolonging pregnancy and to decrease the gestational age-related morbidity associated with

prematurity, but the benefit must be balanced with the risks of conservative management, like clinical chorioamnionitis. Many studies have demonstrated the advantages in conservative management for gestations of less than 34 weeks, whereas the management of pregnancies complicated by PPROM between 34 and 37 weeks continues to be a contentious issue .[66] Proponents for delivery at 34 weeks, argue that because of the lack of significant neonatal benefit in prolonging the pregnancy until 37 weeks, early delivery is justified to reduce the risk of chorioamnionitis. .

A Cochrane review for Women with PPROM prior to 37 Weeks of gestation was published in 2010 (Buchanan, 2010), concludes that there is not sufficient evidence to guide clinical practice regarding the benefits and harms of immediate delivery compared with expectant management.[19]

PPROM between 24 and 32 weeks

Delivery before 32 weeks in PPROM patients is associated with severe neonatal morbidity and mortality. The predominant risk factor is RDS usually due to HMD, affecting 30-100%. Other common morbidities associated are sepsis, affecting from 10- 50%; Intra Ventricular Haemorrhage affecting about 5-50%,

 Chronic lung disease affecting around 2-80% and necrotizing enterocolitis affecting 1-10 %. All of these complications are related directly to gestational

age at the time of birth and will be more frequent and severe it occurs in pregnancies less than 28 weeks.

The aim of the management of women with PPROM between 24 and 32 weeks is prolonging the latency period, preventing the incidence of RDS and IVH, and preventing the fetal/neonatal and maternal infectious morbidity and mortality. These things can be achieved by the use of antibiotics, steroids and tocolytic agents. Contraindications to conservative therapy include chorioamnionitis, non-reassuring fetal testing and abruptio placentae. Women with PPROM between 24 and 32 weeks should be hospitalised and remain as in patients until delivery. These patients in conservative management should be on bed rest with adequate facilities.

PPROM before 24 Weeks

The survival rate of newborn that is born before 24 weeks is very low (Iess than 20-25%).The perinatal mortality in PPROM before 24 weeks is very high (60-90 %). About 48%, 67%, and 83% of these patients in this group will deliver within 3 days, 1 week, and 2 weeks respectively. (Moretti and sibai et al). Approximately 50% of mothers will develop choriooamnionitis, 50% of mothers will be delivered by caesarean section, and abruption occurs in 6.8% of patients. 16% of the surviving new born will have a severe long term sequelae. Most of the survivors are patients who extend their latent

period for 2 weeks or more. Some of the patients have prolonged latency period for several weeks after PPROM without any evidence of infection with little or no liquor amnii. They are associated with high risk for fetal musculoskeletal deformities and pulmonary hypoplasia. Deformities usually appear when the PPROM prolongs to 4 or more weeks.

If the pregnancy is less than 24 weeks the fetal morbidities should be dicussed with the mother and family and the mother should be given the choice of induction of labour and conservative management. If the patient chooses termination of pregnancy it should be made clear that there is only 10-20% probability that the fetus will be born alive. If the mother does not want to go for termination and chooses expectant management, she will be treated with antibiotics, tocolytics and glucocorticoids. If the patient is less than 24 weeks and if the maternal and fetal conditions are satisfactory she may be sent home and readmitted in hospital after 24 weeks for further expectant management.

Surgical Approaches to the Treatment of PPROM

The exact site of rupture of membranes can be visualized endoscopically.[68] In spontaneous rupture the site is usually located above the internal cervical os whereas in traumatic rupture, following amniocentesis, or fetal surgery, the site is far from the cervix. Immediately after rupture, the slit in the

membranes has clean, sharp edges which become irregular with the passage of time. Various experimental approaches have been used to seal the rupture site. Earlier there were attempts made by using fibrin glue which is prepared from mixing thrombin with cryoprecipitate. Amniopatch was created by successive intra-amniotic injections of platelets and cryoprecipitate for traumatic rupture.[69]This method is not useful in patients with spontaneous rupture. It may cause sudden fetal death in some cases due to the release of toxic substances by the activated platelets. Trans cervical application of commercial fibrin tissue sealant made up of thrombin and cryoprecipitate has been tried.[70] Gelatin sponge embolization is also used in the surgical treatment for PROM.[71]

AIM OF THE STUDY

Aim of the study

- To study active versus expectant management in preterm premature rupture of membranes (PPROM) between 32-37 weeks of pregnancy.

- To estimate the prevalence and identify the risk factors of preterm premature rupture of membranes

- To study the perinatal outcome of preterm premature rupture of membranes.

MATERIALS AND METHODS

Materials and Methods

This study was conducted in Institute of Social Obstetrics, Govt. Kasturba Gandhi Hospital for Women and Children under Madras Medical College, Chennai for the period of one year from December 2012 to November2013. Institutional Ethics Committee approval was obtained from Madras Medical College for this study.

Study Method

This was a prospective study which was carried out among pregnant women came with preterm premature rupture of membrane from 32 weeks to 36 weeks 6 days(37 weeks) of gestational age. Sample size was calculated to 108 by using 7.72%[72] prevalence of PPROM with 5% precision.

Sampling Frame

The study participants of 32 weeks to 36 weeks 6 days were divided in to two groups

1. 32-34 weeks completed gestational age group
2. 34-36 weeks completed gestational age group

For presentation purpose 32-34, 34-36 and 32-36 were used instead of additional six days in 34 and 36 gestational age. All the study participants enrolled in both the groups were further randomised to active and expectant

management group. The pregnancy outcomes of above two groups were studied. The study groups were given in below diagram.

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           ┌─────────────────────────────────────┐
           │  Study Participants-32-36 weeks (108) │
           └─────────────────────────────────────┘
                 │                          │
                 ▼                          ▼
     ┌──────────────────┐      ┌──────────────────┐
     │   32-34 weeks A   │      │   34-36 weeks B   │
     └──────────────────┘      └──────────────────┘
        │            │              │            │
        ▼            ▼              ▼            ▼
  ┌─────────┐ ┌──────────┐   ┌─────────┐ ┌──────────┐
  │ Active  │ │ Expectant│   │ Active  │ │ Expectant│
  │Management│ │Management│   │Management│ │Management│
  │ Group I │ │ Group II │   │ Group I │ │ Group II │
  └─────────┘ └──────────┘   └─────────┘ └──────────┘
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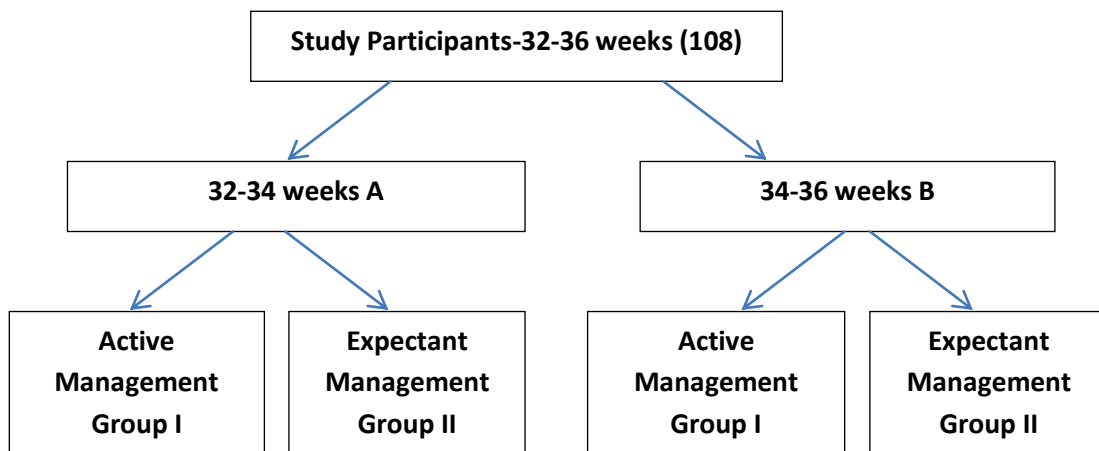
Inclusion criteria

Pregnant Women with Gestational age between 32-36 weeks 6 days with

- Singleton pregnancy

- Primi and multigravida

- Previous LSCS

- Age group between 15-35 years

- Confirmed cases of leaking

Exclusion criteria

- Multiple pregnancies

- Features of chorioamnionitis

- Meconium stained liquor

- Severe oligohydromnios

- Active labour

- Non reassuring fetal heart rate in CTG

- Major congenital anomalies

- Medical or obstetric complications indicating prompt delivery

The study participants with history of PPROM were admitted and PPROM was confirmed by sterile speculum examination, nitrazine test/fern test.

The gestational age was ascertained by LMP and first trimester dating ultrasound. If there is disparity of more than 7 days between the two then gestational age was assumed as per USG. And maternal temperature, pulse, blood pressure and fetal heart rate were recorded.

Investigations

All the baseline investigations like Hb, blood sugar, blood grouping and typing, HIV, VDRL and urine albumin and sugar were done. High vaginal swab was taken at the time of admission for culture and sensitivity. A sterile speculum examination was done to assess the bishop's score initially. Then further digital examinations were strictly prohibited

Expectant Management

The patients who were managed expectantly were observed in labour room. The fetal conditions were monitered by continuous external fetal heart monitoring and non-stress test. In the absence of initiation or progression of

labour, non-reassuring fetal conditions and absence of infection these patients were transferred to antepartum room where periodic assessment of maternal and fetal conditions was done. Modified biophysical profile was done daily till delivery. Delivery was either by spontaneous onset of labour or termination of pregnancy due to development of chorioamnionitis, non-reassuring fetal status in non-stress test and development of severe oligohydramnios. Termination is done by oxytocin induction and caesarean section was done for obstetric indication.

Active Management

In this group, labour was induced either by intra cervical instillation of PgE2 gel or continuous infusion of oxytocin depending on the bishops score. A continuous intravenous infusion of oxytocin starting with a dose of 5mIU/min and doubling of dose is done till delivery of the patient. 0.5 mg of PgE2 gel is kept intra-cervically and bishop's score was assessed after 6 hours and then labour was accelerated by continuous oxytocin infusion.

In both the groups progress of labour was monitored carefully by partogram and Caesarean section was done only for obstetric indications.

All the patients in both the groups irrespective of duration of rupture of membranes, will be given intravenous Ampicillin 2 gm 8 hourly for first 48 hours followed by oral amoxicillin 500 mg every 8 hours for 7 days or till the

patient goes into labour and delivers to reduce the infections. And single course of corticosteroid where given in 32-34 weeks group.

In puerperium, all patients will be followed clinically and investigated for evidence of infection (endometritis). Clinical parameters considered for maternal morbidity were fever, tachycardia, abdominal tenderness, foul smelling lochia, sub involution of uterus, and evaluation of stitch line. And other maternal outcome was recorded.

All the neonates were examined by paediatrician. Neonatal morbidity was considered in cases of neonatal septicaemia, convulsions, or with birth asphyxia and death. The neonatal sepsis was confirmed by blood culture and sensitivity. Respiratory Distress Syndrome (RDS) was defined for our study as early onset of tachypnea, retractions, and oxygen requirement for 24hrs or mechanical ventilation with radiographic confirmation.

All the information was collected in pre-tested questionnaire. All the study participants were assessed until they get discharged. The study was conducted after getting consent from the study participants.

Statistical analysis

All the data were entered in Microsoft Excel. Statistical analysis was done using SPSS version 12. Proportion, nonparametric test and independent sample 't' test. Study outcome is composite variable of Delivery interval,

vaginal delivery, LSCS, Maternal morbidity, Neonatal morbidity, mean hospital stay between two groups.

Benefit to the participants

Close monitoring of all preterm premature rupture of membranes patient's management and identify best method of management of preterm premature rupture of membranes.

OBSERVATION AND ANALYSIS

Observation and Analysis

The study of management of Pre-term Premature rupture of membrane management was conducted in Madras Medical College- Govt. Kasturba Gandhi Institute of Social Obstetrics, Triplicane, Chennai from the period of December 2012 to November 2013 of one year duration.

There was 7656 admission of pregnant women for delivery purpose during the study period. Out of the total admission in this category in the hospital 381 were presented with pre-term premature rupture of membrane. And 273 cases were excluded and 108 cases were included in our study. The selection process of study participants was given in Figure1.

Figure 1. Study participants in the study

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┌─────────────────────────────────────┐
│   Total Admissions for delivery      │
│              7656                    │
└─────────────────────────────────────┘
                 ↓
┌─────────────────────────────────────┐
│        Total PPROM cases             │
│              381                     │
└─────────────────────────────────────┘
                 ↓
┌─────────────────────────────────────┐
│      Excluded PPROM cases            │
│              273                     │
└─────────────────────────────────────┘
                 ↓
┌─────────────────────────────────────┐
│  Total selected PPROM cases for study│
│              108                     │
└─────────────────────────────────────┘
          ↙               ↘
┌──────────────────────┐  ┌──────────────────────┐
│ Total put up in      │  │ Total Put in Expectant│
│ Active management    │  │ Management            │
│        55            │  │        53             │
└──────────────────────┘  └──────────────────────┘
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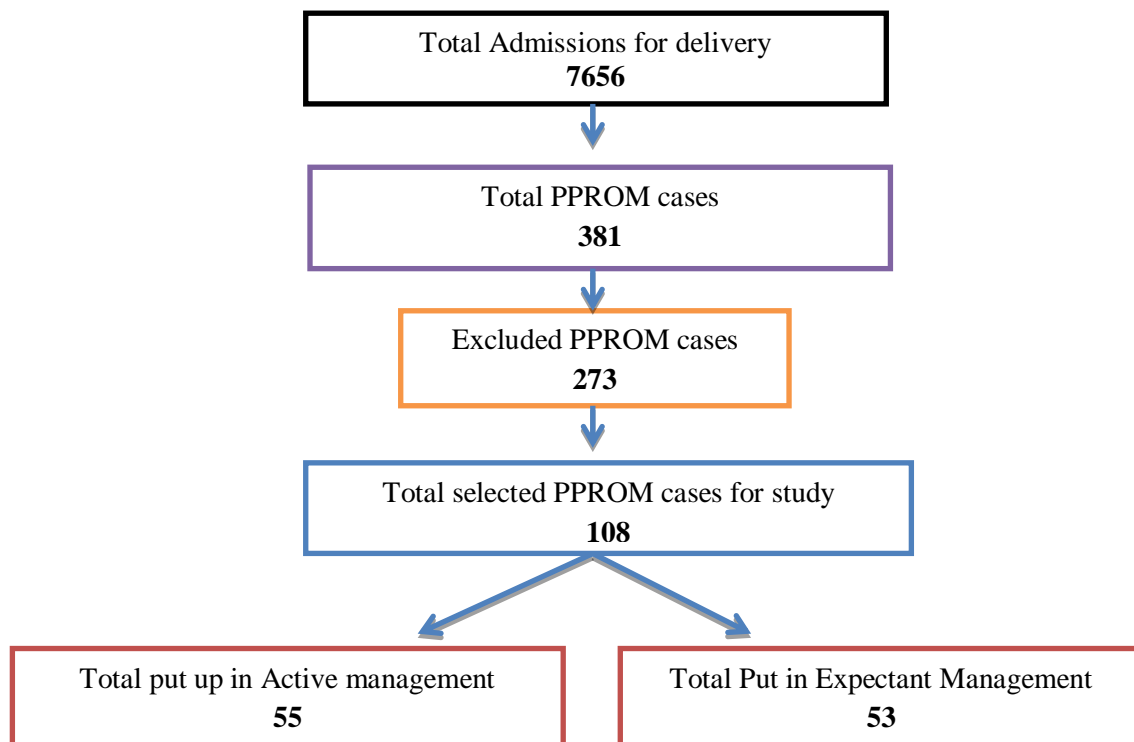
The incidence of PPROM in the study was 3.56% during study period.

Socio demographic indicators of study participants:

Figure 2. Number of study participants
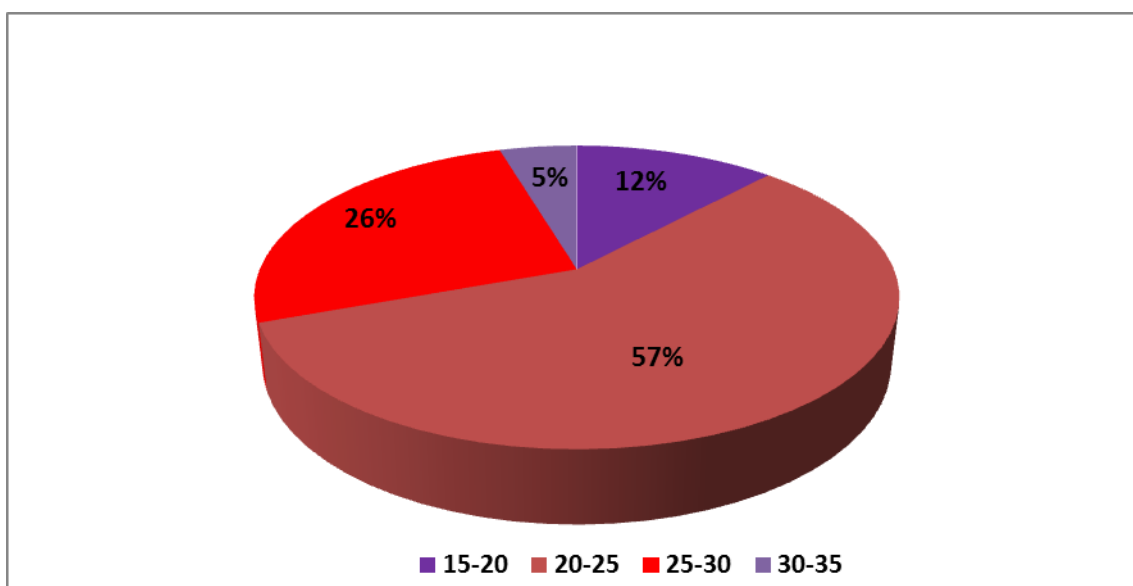
The majority of the study participants were in the age group of 20-25 years (57%). And 26% were in the age group of 25-30 years, 5% in 30-35%, 12% in 15-20%.

Table 1.Age distribution and educational status of study participants (n=108)

Age group (yrs)	<6th Std	%	6th to 10th Std	%	10th to 12th Std	%	Degree	%	Total
15-20	3	23.1	5	38.5	3	23.1	2	23.1	13
20-25	22	35.5	25	40.3	11	17.7	4	6.5	62
25-30	10	35.7	12	42.9	5	17.9	1	3.6	28
30-35	3	60.0	1	20.0	1	20.0	0	0.0	5
Total	38	35.2	43	39.8	20	18.5	7	6.5	108

Most of the study participants (39.8%) were studied 6th to 10th standard. And 35.2% were studied only up to 6th std. Only 6.5% of the study participants studied up to degree.

Table 2.Age distribution and socioeconomic status of study participants (n=108)

Age group(yrs)	Clerical	%	Skilled workers	%	Semi-skilled workers	%	Total
15-20	1	7.7%	2	15.4%	10	76.9%	13
20-25	2	3.2%	20	32.3%	40	64.5%	62
25-30	2	7.1%	14	50.0%	12	42.9%	28
30-35	0	0.0%	1	20.0%	4	80.0%	5
Total	5	4.6%	37	34.3%	66	61.1%	108

Among the study participants 61.1% were semi-skilled workers, 34.3% were skilled workers and 4.6% clerical workers.

Table 3.Age distribution and socioeconomic status of study participants (n=108)

Age group(yrs)	Obstetric formula	0	1	2	3	4	5
15-20	Gravida	0	12	1	0	0	0
	Para	12	1	0	0	0	0
	Live	12	1	0	0	0	0
	Abortion	13	0	0	0	0	0
20-25	Gravida	0	44	12	2	3	1
	Para	48	10	4	0	0	0
	Live	50	8	4	0	0	0
	Abortion	54	7	0	0	1	0
25-30	Gravida	0	11	12	4	1	0
	Para	13	14	1	0	0	0
	Live	15	12	1	0	0	0
	Abortion	23	4	0	1	0	0
30-35	Gravida	0	2	1	1	0	1
	Para	2	2	1	0	0	0
	Live	2	3	0	0	0	0
	Abortion	3	1	1	0	0	0

Figure 3 and Table 2 shows the distribution of parity among study participants. Out of the total participants 69 presented with G_1, 26 with G_2, 7 with G3, 4 with G_4, and 2 with G_5. Para $_1$, Live$_1$, Abortion$_1$ were 27,24 and 12 respectively.

Figure 3. Distribution of gravity among study participants
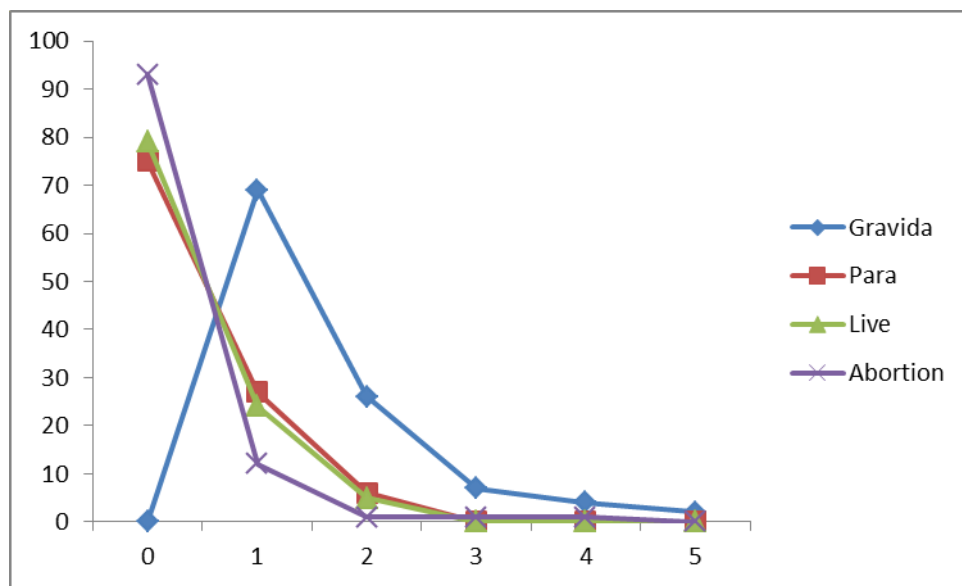
Table 4.Descriptive statistics of study participants profile

Item	Minimum	Maximum	Mean	Std. Deviation
Age(yrs)	18	34	24.31	3.38
Height(cms)	150	170	158.29	5.52
Weight(kg)	49	75	62.90	7.78
Gravida	1	5	1.56	0.91
Para	0	2	0.36	0.59
Live	0	2	0.31	0.56
Abortion	0	4	0.19	0.59
Gestational Age(weeks)	32	36	34.70	1.23

The mean age of study participants was 24.31 years (SD: 3.38) with 95% Confidence Interval from 23.67 to 24.96 yrs. The average gestational weeks

of study participants was 34.7(SD: 1.23& 95% CI: 34.47-34.94). The mean height was 158.29 cms, weight 62.90 kgs.

Membrane Rupture:

Figure 4. Age group and pre-term PROM
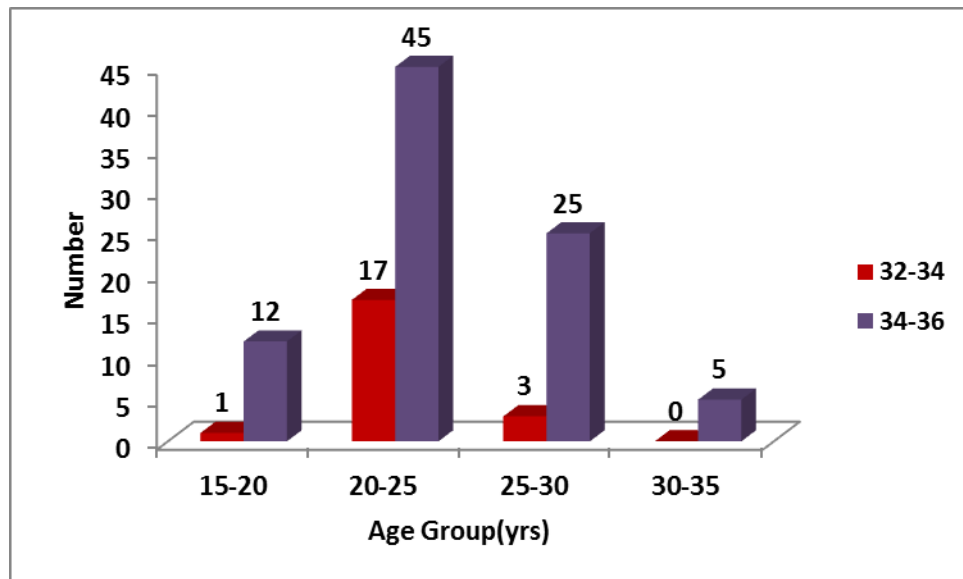
Figure 4. Shows the distribution of gestational week and age group of study participants. The maximum number of PPROM occured in the age group of 20-25 years with 17 pregnant mother with early PPROM (32-34weeks) and 45 with late PPROM (34-36weeks). In 15-20 years, 12 mothers presented with late PPROM compared with one in early PPROM.

Figure 5. Pre-term PROM
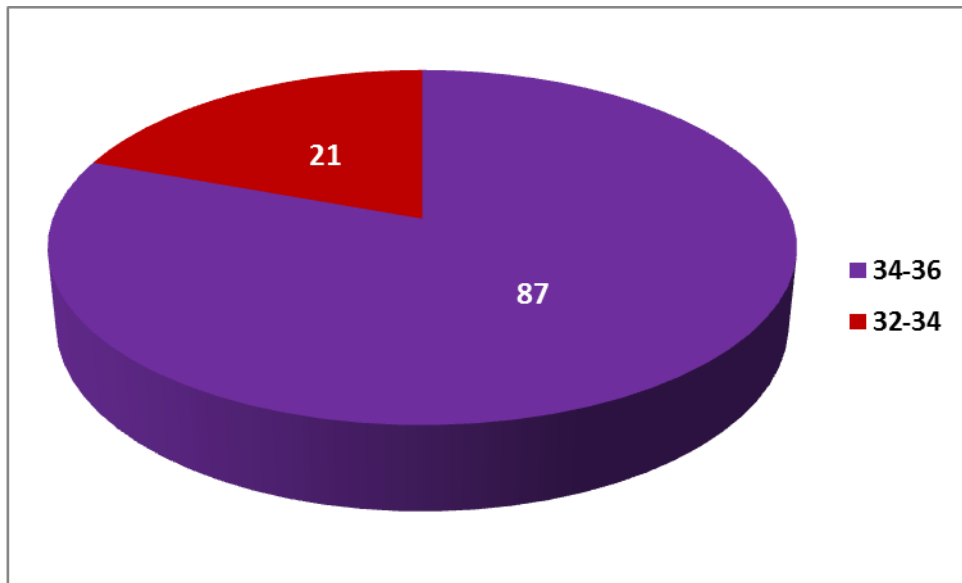
The pie diagram in figure 5 shows among study participants of 80.6 %(87) in late PPROM and 19.4 %(21) in early PPROM.

Table 5.Details of Membrane Rupture outside

MRO	Minimum	Maximum	Mean	Std. Deviation
MRO at admission(hrs)	1	77	14.91	13.828
Admission Delivery interval(hrs)	2	128	20.42	22.915
MRO- Delivery intervel(hrs)	4	135	35.32	20.718

Table 5. and Figure 6. Shows the membrane rupture duration at the time of admission, at the time of delivery and total membrane rupture duration from

MRO to delivery. The mean MRO during admission was 14.91 hours, admission to delivery interval 15.81 hours and MRO to delivery interval 30.72 hours.

Figure 6. Details of Membrane Rupture and delivery outcome
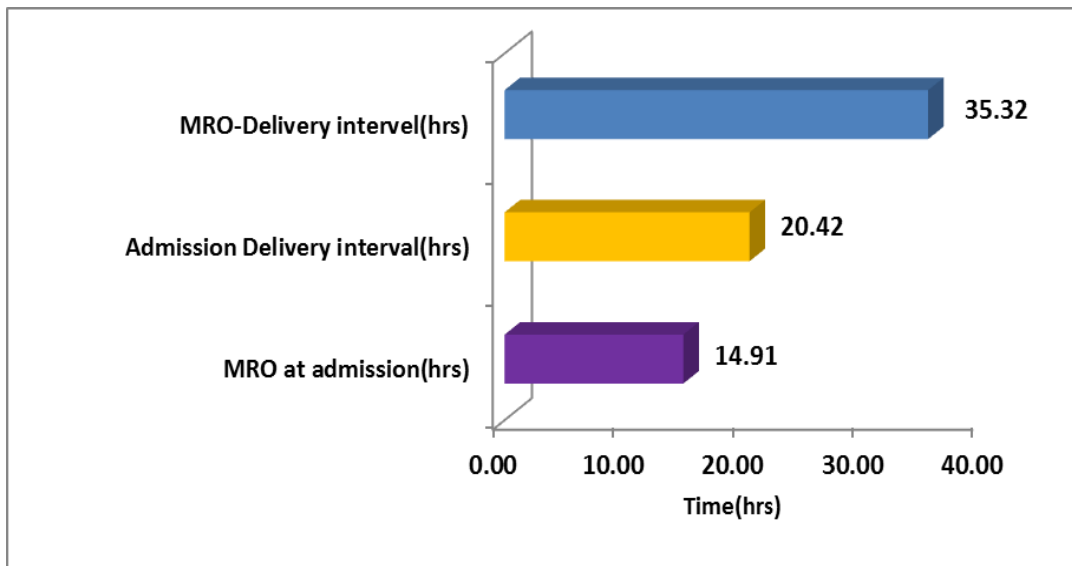
Table 6. Details of MRO at admission

Gestational age/Duration	<6hrs(%)	6-12hrs(%)	12-24hrs(%)	>24 hrs(%)	Total(%)	p value
32-34	8(38.10)	6(4.76)	1(4.76)	6(28.57)	21(100)	
34-36	30(34.48)	20(28.74)	25(28.74)	12(13.79)	87(100)	
Total	38(35.19)	26(24.07)	26(24.07)	18(16.67)	108(100)	0.14

Table 5 shows 35.19% of pregnant mothers presented with less than six hours of MRO with 38.1% in 32-34 weeks and 34.48% in 34-36 weeks of gestation. The admission after 24 hours was 16.67%. The MRO duration and the gestational age was not significant (p=0.14%).

Table 7. Details of admission to delivery duration and pre-term group

Preterm Group/Admission Delivery interval	<6hrs (%)	6-12hrs (%)	12-24hrs (%)	24-48hrs (%)	>48hrs (%)	Total (%)	p value
32-34	2(9.50)	2(9.50)	4(19.06)	9(42.90)	4(19.06)	21(100)	
34-36	31(35.60)	23(26.40)	9(10.30)	18(10.30)	6(6.90)	87(100)	0.007
Total	33(30.6)	25(23.1)	13(12.03)	27(25)	10(9.25)	108(100)	

Totally 23.1% of MRO clients delivered in 6-12 hrs of admission and 9.5% in 32-34 weeks of gestation and 26.4% in 34-36 weeks. And 35.6% were delivered within six hours of admission in 34-36 weeks and 9.5% in 32-34 weeks. Only 10.2% were delivered after 48 hours out of that 6.9% delivered in 34-36 weeks and 23.8% in 32-34 weeks. The difference of delivery duration between these two groups was statistically significant (p<0.007)

Table 8. Details of MRO to delivery

Preterm group/MRO-Delivery group(hrs)	<12 (%)	12-24 (%)	24-48 (%)	>48 (%)	Total (%)	p value
32-34	1(4.76)	3(14.29)	7(33.33)	10(47.62)	21(100)	
34-36	14(16.09)	32(36.78)	31(35.63)	10(11.49)	87(100)	0.001
Total	15(13.89)	35(32.41)	38(35.19)	20(18.52)	108(100)	

In the gestational age group of 32-34 weeks, 4.76% deliveries were conducted from MRO to delivery duration of <12 hrs. But 16.09% were conducted in 34-36 weeks. And 47.62% of total deliveries conducted in 32-34 weeks at more than 48 hours and 11.49% in 34-36 weeks. Table 7 shows the statistical

significant difference between early and late pre-term PROM group (p<0.001).

Active and Expectant management:

Figure 7. Management protocol for PPROM patients
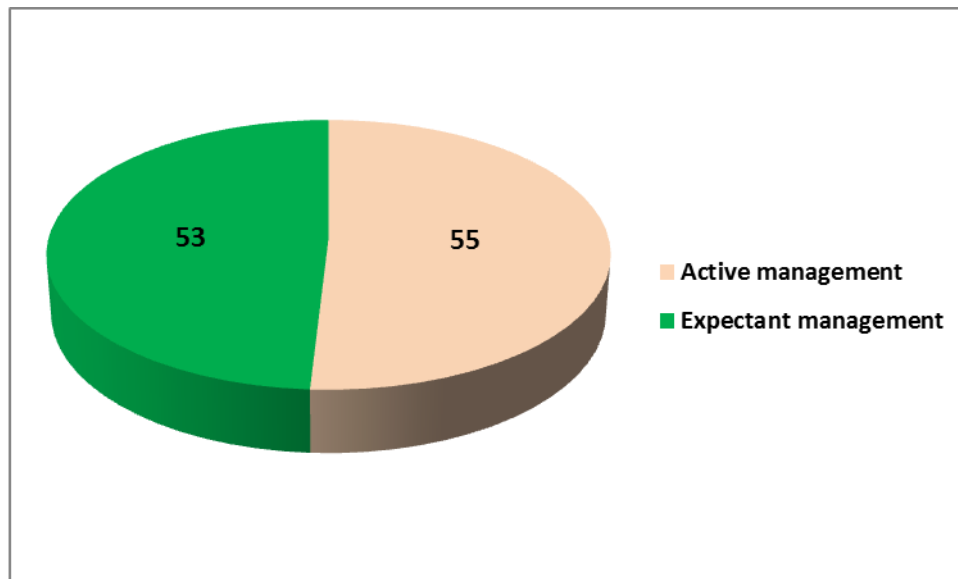
Among total study participants 50.9 %(55) were given active management and 49.1 %(53) given expectant management for PPROM.

The height of 155-160 cms was high (44.00%) in active management while it was high in 150-155 cms in case of active management group (39.62%). The weight was high in 60-70kgs group both the management groups (44%). The age group of 20-25 years was high in expectant management (53.23%) and 30-35 yrs group was high (80%) in active management while compare both the group. But in both the groups in the age group of 20-25 was high in numbers. (Table.9)

Table 9. Management option and personal attributes for PPROM (n=108)

Attributes	Characters	Active management	%	Expectant management	%	Total	p value
Height Group(cm)	150-155	17	44.74	21	55.26	38	
	155-160	22	57.89	16	42.11	38	
	160-165	7	36.84	12	63.16	19	
	165-170	9	69.23	4	30.77	13	0.206
Weight group(kgs)	<50	4	50.00	4	50.00	8	
	50-60	18	54.55	15	45.45	33	
	60-70	22	50.00	22	50.00	44	
	>70	11	47.83	12	52.17	23	0.96
Age groups	15-20	8	61.54	5	38.46	13	
	20-25	29	46.77	33	53.23	62	
	25-30	14	50.00	14	50.00	28	
	30-35	4	80.00	1	20.00	5	0.44
Education	<6th Std	21	55.26	17	44.74	38	
	6th to 10th Std	21	48.84	22	51.16	43	
	10th to 12th Std	12	60.00	8	40.00	20	
	Degree	1	14.29	6	85.71	7	0.19
Socio Economic Status	Clerical	4	80.00	1	20.00	5	
	Skilled workers	24	64.86	13	35.14	37	
	Semi-skilled workers	27	40.91	39	59.09	66	0.02
Total		**55**	**50.93**	**53**	**49.07**	**108**	

The predominant age group less than 12th standard lies in both the groups. While comparing the socio economic status between the management groups clerical staff were high percentage in active (80%) and semi −skilled workers in expectant management group. If we count individual group highest numbers were noted in semi-skilled group. Height, weight and age group was not statistically significant between active and expectant management of PPROM. But Socio economic status has a significant association between

management groups. Clerical and skilled workers mostly put up in active and semiskilled workers (59%) put up in expectant management.(Table.9)

Table 10. Relationship between hospital course in the study participants (n=108)

Attributes	Characters	Active management	%	Expectant management	%	Total	p value
MRO at admission group	<6hrs	6	15.79	32	84.21	38	
	6-12hrs	8	30.77	18	69.23	26	
	12-24hrs	24	92.31	2	7.69	26	
	>24 hrs	17	94.44	1	5.56	18	0.000
Admission Delivery interval group	<6hrs	30	90.92	3	9.08	33	
	6-12hrs	21	84.00	4	16.00	25	
	12-24hrs	1	0.00	12	100.00	13	
	24-48hrs	3	11.10	24	88.90	27	
	>48hrs	0	0.00	10	100.00	10	0.000
MRO-Delivery group(hrs)	<12	7	46.67	8	53.33	15	
	12-24	16	45.71	19	54.29	35	
	24-48	22	57.89	16	42.11	38	
	>48	10	50.00	10	50.00	20	0.74
Mode of delivery	Labour Natural	36	45.57	43	54.43	79	
	LSCS	18	66.67	9	33.33	27	
	Forceps delivery	1	50.00	1	50.00	2	0.16
High Vaginal Swab	No growth	51	54.84	42	45.16	93	
	E.Coli	3	30.00	7	70.00	10	
	Staphylococcus aureus	1	25.00	3	75.00	4	
	Klebsiella	0	0.00	1	100.00	1	0.22
Total		55	50.93	53	49.07	108	

In MRO to admission group, highest number of persons (94.44%) got admitted in > 24 hrs of MRO in active management but it was highest in <6 hrs in expectant management (84.21%) if comparing between the group.

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Most of the patients got admitted in active management group (24) in 12-24 hrs. Among delivered with in <6hrs after hospital admission, 90.92% in active and 9.08% in expectant management group. In 6-12 hrs. , it was 84% in active and 16 % in expectant management group. Only 11.1% got delivered more than 12 hrs in active management and 89.9% in expectant management.

MRO at the time of admission and duration between admission and delivery were associated with active and expectant management. Total MRO to delivery duration, mode of delivery and vaginal growth on high vaginal swab does not have any association with the management options.

Table 11. PPROM mother hospitalisation between the treatment group(n=108)

Attributes	Charcters	Active manage-ment	%	Expectant manage-ment	%	Total	p value
Duration of Hospitilization -Mother(Days)	<5days	38	53.52	33	46.48	71	
	>5 days	17	45.95	20	54.05	37	0.45
maternal puerperium	No	55	50.93	53	49.07	108	
Fever	No	55	51.40	52	48.60	107	
	Yes	0	0.00	1	100.00	1	1.047
Tachycardia	No	55	50.93	53	49.07	108	
Foul Smelling Vaginal Discharge	No	55	50.93	53	49.07	108	
Abruptio placenta	No	55	51.40	52	48.60	107	
	Yes	0	0	1	100.00	1	0.30
Total		**55**	**50.93**	**53**	**49.07**	**108**	

The duration of mother stay in the hospital more than 5 days was high in expectant management (54.05%) than in active management (45.95%).

Maternal puerperium, tachycardia and foul smelling vaginal discharge were not present in the both the groups. Fever was noted in one patient in expectant and two in active management group. Abruptio placenta was noted in one case in expectant management. The duration of mother hospitalization and post-operative complications like fever, abruption placenta were not statistically associated with active and expectant management (p>0.05)

Table 12. Neonatal factors and PPROM management (n=108)

Attributes	Charcters	Active manage-ment	%	Expectant manage-ment	%	Total	p value
Duration of Hospitalisation -Baby(Days)	<5days	35	63.64	20	36.36	55	
	>5 days	20	37.74	33	62.26	53	0.007
Birth Weight(Kg)	<1.5	0	0.00	1	100.00	1	
	1.5-2	10	29.41	24	70.59	34	
	2-2.5	29	53.70	25	46.30	54	
	>2.5	16	84.21	3	15.79	19	0.002
Apgar Score-1min	<7	27	46.55	31	53.45	58	
	>7	28	56.00	22	44.00	50	0.33
Apgar Score-5min	<7	11	50.00	11	50.00	22	
	>7	44	51.16	42	48.84	86	0.92
Sepsis	No	53	54.10	45	45.90	98	
	Yes	2	20.00	8	80.00	10	0.04
RDS	No	38	44.71	47	55.29	85	
	Yes	17	73.90	6	26.10	23	0.01
LBW	No	51	54.84	42	45.16	93	
	Yes	4	26.67	11	73.33	15	0.04
Pre-maturity	No	52	53.06	46	46.94	98	
	Yes	3	30.00	7	70.00	10	0.16
Asphyxia	No	53	51.96	49	48.04	102	
	Yes	2	33.33	4	66.67	6	0.38
Hypoglycemia	No	53	50.48	52	49.52	105	0.58
	Yes	2	66.67	1	33.33	3	
Necrotising Entero colitis	No	52	50.98	50	49.02	102	
	Yes	3	50.00	3	50.00	6	0.93
Others	NO	52	50.49	51	49.51	103	
	Yes	3	60.00	2	40.00	5	0.67
Total		**55**	**50.93**	**53**	**49.07**	**108**	

The duration of neonate hospitalisation was more than 5 days in 62.26% in expectant management and 37.74% in active management. The same was less than 5 days in 63.34% in active and 36.36% in expectant management. The difference was statistically significant (p=0.007). Low birth weight between 1.5-2 kgs was seen high (73.33%) in expectant and 26.67% in active management. The birth weight between active and expectant management was statistically significant (p=0.002). Apgar score of 1 min and 5 min between the treatment groups was not statically significant. Sepsis was present in 20% of active and 80% of expectant management and the difference was statically significant. As like this RDS was also high in active (73.90%) than in expectant management (26.10%). The difference between prematurity, asphyxia, NEC and others were not statically significant between two treatment groups (p>0.05).

Fig 8.Gestational week and management of PPROM
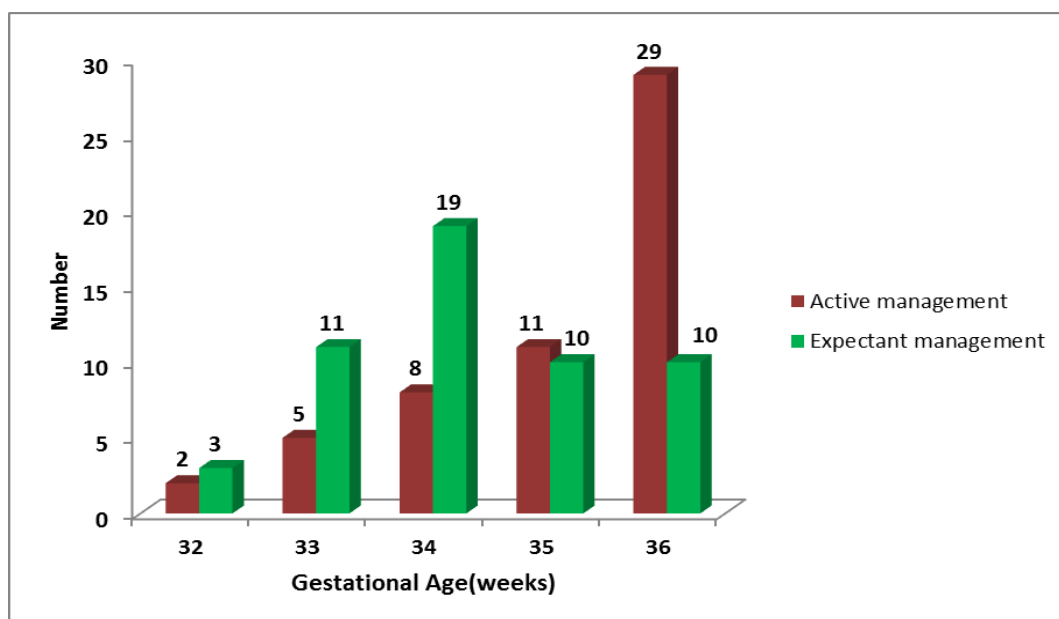
Figure 8.and Table13. shows the relationship between gestational age and active and expectant management. Active management was high in 34-36 weeks groups (55.17%) compared with 44.83% in expectant management and expectant management was high 66.67% in 32-34 weeks groups than active management (33.33%). However these differences were not statistically significant (p=0.09).

Table 13. Management of PPROM and gestational group

Pre-term Group	Active management	%	Expectant management	%	Total (%)	P value
32-34	7	33.33	14	66.67	21(100)	0.72
34-36	48	55.17	39	44.83	87(100)	
Total	55	50.93	53	49.07	108(100)	

The active management was less in 32-34 weeks of PPROM (33.33%) when compared with expectant management (66.67%), whereas this was reversed in 34-36 weeks of PPROM. The difference between active and expectant line of management between early preterm PROM and late preterm PROM was not statistically significant (p=0.72).

Table14: Oxytocin induction and management of PPROM

Management	Oxytocin induction			p value
	No	Yes	Total	
Active management	6	49	55	
Expectant management	47	6	53	
Total	53	54	108	0.001

Oxytocin induction was high (49) in active management than in expectant management (6) and these difference was highly significant statistically (p<0.001).

Table15. Relationship PGE induction and management of PPROM

Management	PGE induction			p value
	No	Yes	Total	
Active management	52	3	55	
Expectant management	53	0	53	0.08
Total	105	3	108	

Only three patients were given PGE-2 gel for induction in active management and none were given in expectant management.

Table 16. Mother hospitalization in the management groups based on mode of delivery(n=108)

| Management | MOD | Duration of Hospitilisation-Mother(Days) | | Total | p value |
		<5days	>5 days		
Active management	Labour Natural	34	2	36	
	LSCS	3	15	18	
	Forceps delivery	1	0	1	0.00
		38	17	55	
Expectant management	Labour Natural	32	11	43	
	LSCS	0	9	9	
	Forceps delivery	1	0	1	
		33	20	53	0.00

The number of study participants who stayed less than 5 days in the hospital was high then >5 days in labour naturals and forceps delivery and it was reversed in case of LSCS. .Duration of hospitalisation of mother was highly statistically significant in relation with mode of delivery in both the management group(p<0.001)

Table 17. Hospitalisation of baby and the management group based on mode of delivery (n=108)

Management	MOD	Duration of Hospitilisation-baby(Days)		Total	p value
		0-5days	>5 days		
Active management	Labour Natural	23	13	36	
	LSCS	11	7	18	
	Forceps delivery	1	0	1	0.73
	Total	35	20	55	
Expectant management	Labour Natural	29	14	43	
	LSCS	5	4	9	
	Forceps delivery	1	0	1	
	Total	35	18	53	0.18

Table 17. describes the duration of stay in both the study groups in relation with mode of delivery. Duration of hospitalisation of baby was not statistically significant in relation with mode of delivery in both the management group (p<0.73 in active management group and 0.18 in expectant management.

Table 18. Duration of stay of study participants in Labour naturals (n=79)

Management	Number of participants	Mean(days)	SD	P value
Active management	36	3.61	1.05	
Expectant management	43	5.14	1.06	0.00

The time duration of stay among pregnant put up in the active management was 3.61days and in expectant management 5.14 days in the hospital. The mean difference of hospitalisation between active and expectant management was highly significant in patients delivered labour naturals (p<0.001).

Table 19. Duration of stay of study participants undergone LSCS (n=27)

Management	Number of participants	Mean(days)	SD	P value
Active management	18	7.67	2.08	
Expectant management	9	10.44	2.12	0.00

The mean duration of stay in the hospital among pregnant mother undergone LSCS in active management was 7.67 days compared to 10.44 days in expectant management. The mean difference of hospital stay of mother between active and expectant management was highly significant in patients delivered by LSCS (p<0.001).

Table 20. Duration of hospital stay in admitted neonates (n=68)

Management	Number of participants	Mean(days)	SD	P value
Active management	31	7.10	3.04	
Expectant management	37	8.49	3.15	0.90

Among admitted children, the mean duration of hospital stay in active management was 7.10 days and in expectant management 8.49 days. The mean difference of hospital stay of infant born between active and expectant management was not significant (p<0.90).

Figure 9. Indication for LSCS in the study participants
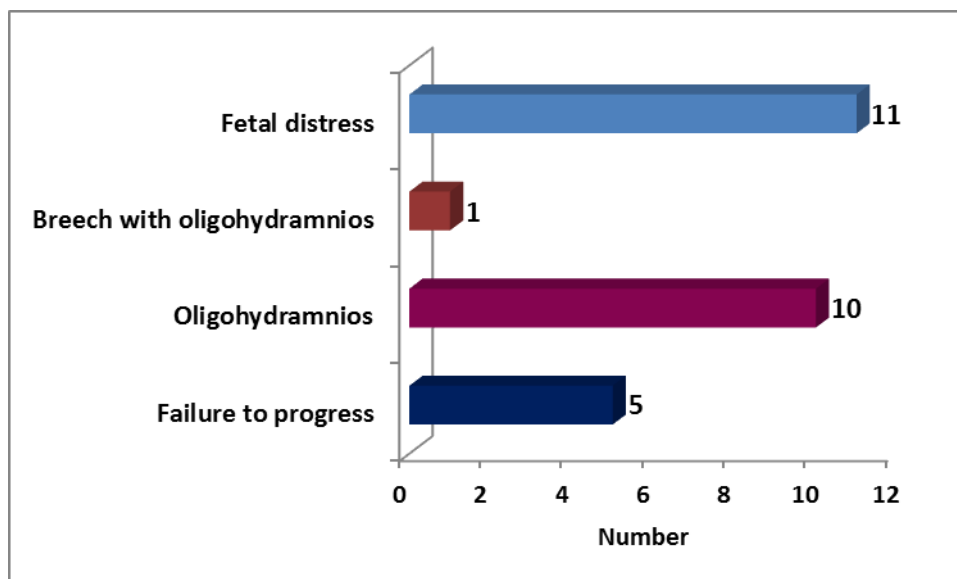
The indication for Caesarean section is given in Figure 9. The reasons were oligohydraminios, fetal distress, failure to progress and breech presentation with oligohydraminios in reducing order.

Table 21.Univariate analysis of management of PPROM (n=108)

Factors	Active management Mean(SD)	Expectant management Mean(SD)	P value
Age(yrs)	24.30(3.67)	24.32(3.09)	0.26
Gestational Age(weeks)	35.15(1.15)	34.25(1.16)	0.90
Gravida	1.55(0.83)	1.57(0.99)	0.77
Para	0.35(0.55)	0.38(0.63)	0.39
Live	0.33(0.55)	0.30(0.57)	0.88
Abortion	0.20(0.52)	0.19(0.65)	0.99
MRO at admission (hrs)	22.25(15.02)	7.28(6.55)	0.00
Admission Delivery interval (hrs)	9.29(17.26)	31.96(22.45)	0.00
MRO-Delivery interval (hrs)	31.55(22.34)	39.25(23.18)	0.82
Duration of Hospitalisation of Mother(days)	4.96(2.40)	6.04(2.38)	0.12
Duration of Hospitalisation of Baby(days)	4.00(4.22)	5.92(4.90)	0.69
Apgar Score-1min	6.07(1.40)	6.04(1.43)	0.87
Apgar Score-5min	7.35(1.16)	7.38(1.18)	0.89

Univariate analysis was done for important factors that determine the management of PPROM (Table.21). The mean age of patients put in active management was 24.30 years (SD: 1.15) and 24.32 years in expectant management group. Average gravida, para, live, abortion in active management group was 1.55, 0.35, 0.33 and 0.20 and expectant management 1.57, 0.38, 0.30 and 0.19 respectively. The mean time after MRO for admission was high in active management (22.25 hrs) than in expectant management (7.28 hrs). But the time duration between admission and delivery

was reversed; it was high in expectant management (Mean: 31.96hrs) compared with active management. The mean time duration between MRO to delivery duration in active management was 31.55 hrs and expectant management 39.25 hrs. In that MRO time during admission and time duration between admission and delivery were highly significant. But the obstetric parity, gestational age, age of the patients, duration of hospitalization of baby and mother and apgar 1and 5 min. were not statistically significant between treatment groups.

Table 22. Profile of hospitalized neonates (n=68)

Attributes	Characters	Active management	%	Expectant management	%	Total	p value
Duration of hospitalisation-Baby(Days)	<5days	11	73.3	4	99.26	15	
	>5 days	20	37.7	23	99.62	53	0.02
Birth Weight(Kg)	<1.5	0	0	1	100	1	
	1.5-2	8	26.7	22	73.3	30	
	2-2.5	18	56.3	14	43.7	32	
	>2.5	5	100	0	0	5	0.01
Apgar Score-1min	<7	18	43.9	23	56.1	41	
	>7	13	48.1	14	51.9	27	0.86
Apgar Score-5min	<7	8	47.1	9	52.9	17	
	>7	23	45.1	28	54.9	51	0.55
Sepsis	Yes	2	25	6	75	8	1.95
RDS	Yes	17	73.9	6	26.1	23	0.00
LBW	Yes	3	23.1	10	76.9	13	0.07
Pre-maturity	Yes	3	30	7	70	10	0.32
Asphyxia	Yes	2	33.3	4	66.7	6	0.52
Hypoglycaemia	Yes	2	66.7	1	33.3	3	0.58
Necrotising Entero colitis	Yes	3	50.1	3	49.9	6	1.00
Others	Yes	3	60	2	40	5	0.65
Total		31	45.6	37	54.4	68	

Babies' duration of hospitalisation whose were born from active and expectant management was not statistically significant. As like RDS, birth weight was also statistically significant.

Table 23.Profile of hospitalization based upon preterm group(n=68)

Pre-term group	Attributes	Characters	Active management	%	Expectant management	%	Total	p value
32-34	Duration of hospitalisation-Baby(Days)	<5days	2	100	0	0.0	2	0.03
		>5 days	5	26.3	14	74.7	19	
34-36	Duration of hospitalisation-Baby(Days)	<5days	9	69.2	4	30.8	13	0.12
		>5 days	15	44.1	19	55.9	34	
32-34	Birth Weight(Kg)	<1.5	0	0	1	100.0	1	0.93
		1.5-2	5	27.8	13	72.2	18	
		2-2.5	2	100	0	0.0	2	
		>2.5	0	0	0	0.0	0	
34-36	Birth Weight(Kg)	<1.5	0	0	0	0.0	0	0.17
		1.5-2	3	25	9	75.0	12	
		2-2.5	16	53.3	14	46.7	30	
		>2.5	5	100	0	0.0	5	
32-34	Apgar Score-1min	<7	5	33.3	10	66.7	15	1.00
		>7	2	33.3	14	66.7	16	
34-36	Apgar Score-1min	<7	13	50	13	50.0	26	1.00
		>7	11	52.4	10	47.6	21	
32-34	Apgar Score-5min	<7	2	40	3	60.0	5	1.00
		>7	5	31.3	11	68.7	16	
34-36	Apgar Score-5min	<7	6	50	6	50.0	12	1.00
		>7	18	51.4	17	48.6	35	
32-34	Sepsis	Yes	1	20.00	4	80.0	5	0.12
34-36	Sepsis	Yes	1	33.3	2	66.7	3	1.00
32-34	RDS	Yes	5	83.3	1	16.7	6	0.01
34-36	RDS	Yes	12	70.6	5	29.4	17	0.07
32-34	LBW	Yes	3	42.9	4	57.1	7	0.63
34-36	LBW	Yes	0	0	6	100.0	6	0.00
32-34	Pre-maturity	Yes	1	20	4	80.0	5	0.62
34-36	Pre-maturity	Yes	2	40	3	60.0	5	0.66
32-34	Asphyxia	Yes	0	0	2	100.0	2	0.53
34-36	Asphyxia	Yes	2	50	2	50.0	4	1.00
32-34	Hypoglycaemia	Yes	1	50	1	50.0	2	1.00
34-36	Hypoglycaemia	Yes	1	100	0	0.0	1	1.00
34-36	Necrotising Entero colitis	Yes	3	50	3	50.0	6	1.00
32-34	Others	Yes	0	0	1	100.0	1	1.00
34-36	Others	Yes	3	75	1	25.0	4	0.69

Duration of hospitalisation of baby was significant between treatment group in 32-34 weeks (p<0.03). But it was not statistically significant in 34-36 weeks group. LBW was significant in 34-36 weeks group between two management group (p<0.001). Remaining other indicators was not significant between treatment groups in both preterm groups.

Table 24. PPROM Mother and pre term division (n=108)

Pre-term group	Attributes	Characters	Active management	%	Expectant management	%	Total	p value
	Admission Delivery interval	<6hrs	2	100.00	0	0.00	2.00	
		6-12hrs	2	100.00	0	0.00	2.00	
		12-24hrs	1	25.00	3	75.00	4.00	
		24-48hrs	2	22.22	7	77.78	9.00	
32-34		>48hrs	0	00.00	4	100.00	4.00	0.03
	Admission Delivery interval	<6hrs	28	90.32	3	9.68	31.00	
		6-12hrs	19	82.61	4	17.39	23.00	
		12-24hrs	0	0.00	9	100.00	9.00	
		24-48hrs	1	5.56	17	94.44	18.00	
34-36		>48hrs	0	0.00	6	100.00	6.00	0.00
32-34	Mode of delivery	Labour Natural	6	31.58	13	68.42	19.00	
		LSCS	1	50.00	1	50.00	2.00	1.00
34-36	Mode of delivery	Labour Natural	30	50.00	30	50.00	60.00	
		LSCS	17	68.00	8	32.00	25.00	
		Forceps delivery	1	50.00	1	50.00	2.00	0.31
32-34	Duration of Hospitalization-Mother(Days)	<5days	5	33.33	10	66.67	15.00	
		>5 days	2	33.33	4	66.67	6.00	1.00
34-36	Duration of Hospitalization-Mother(Days)	<5days	33	58.93	23	41.07	56.00	
		>5 days	15	48.39	16	51.61	31.00	0.37
34-36	Fever	Yes	0	0.00	1	100.00	1.00	0.00
32-34	Abruptio-Placenta	Yes	0	0.00	1	100.00	1.00	0.46

Admission delivery interval was significant in both 32-34 as well as 34-36 weeks preterm PPROM. Mode of delivery, duration of hospitalisation of mother, fever and abruptio placenta were not significant between management in both preterm group.

DISCUSSION

Discussion

Among the participants studied for preterm premature rupture of membranes over a period of one year has shown that the incidence of PPROM is more common in younger age group of 20-25 years (57%) and less in > 30 years (5%). The same results were noted in study by shehla et al where the incidence of PPROM in women < 25 years was 58.8%.[27] The incidence of PPROM is more common in low socio economic group of 61.1% in our study which is similar to the study by shehla et al is 68.2%.[27] The high prevalence in younger age and low socio economic group is due to early marriages and poverty leading to poor nutrition which is one of the risk factor for PPROM. The incidence of PPROM was 3.56% in our study. The PPROM incidence is stated between 4-14%[15] in various studies. The low incidence of PPROM is due to regular antenatal check-ups, increased living condition and wide use of antibiotics.

In present study there is no significant difference observed between the distribution of gravida, Para, live and abortion in both active and expectant management.

Around 85% of patients in both groups are admitted within 24 hours of membrane rupture in the study. In PPROM, most of the patients get into labour within few hours. In PPROM labour generally occurs within 24 hours in 35-50 % , within 72 hours in 70 %, and 90% of patients will deliver within

two weeks (Daftary et al).[72] In the present study, in expectant group out of the 53 patients 19 patients (35.84%) were delivered within 24 hours and 10 (18 %) patients have the latency period of > 48 hours . A study by Neerhof et al shows that only 10% of the women managed expectantly had latency period greater than 48 hours.[67] In active management group, about 52 (94%) of patients delivered within 24 hours. This is due to the augmentation of labour by oxytocin and PGE_2 gel in active management group.

The incidence of LSCS in active management is 32.12 %   whereas in expectant group is 16.9%.In the study by Naef et el the incidence of LSCS in both groups are equal.[66] There was only one forceps delivery in both active group and conservative group.

The incidence of chorioamnionitis is 5.6% (3 patients) in conservative group and none in active group whereas the incidence of chorioamnionitis is 2% in active group and 16% in expectant group in the study by Naef et al.[66] The decrease in incidence was probably due to prophylactic antibiotics usage.

The mean duration of hospitalisation in active management group is 3.61 in labour natural and 7.67 in LSCS whereas in expectant group is 5.14 in labour natural and 10.44 in LSCS. The duration of hospitalisation is prolonged in expectant group in our study which is due to prolonged latency period. Mercer et al also reported prolonged hospitalisation of mothers in expectant

group managed between 32 to 36 weeks.[65] There was one (1.8%) reported case of abruption and one (1.8%) case of puerperal fever in expectant group. There was no reported case of puerperal sepsis or post-partum endometritis.

The incidence of growth in high vaginal swab culture in active management was 7.2% and 20% in expectant management however this difference was not statistically significant. E-coli was identified in 9.25% of high vaginal swabs in our study. A case control study conducted in Mysore showed a high incidence of E.coli (20 %) and confirmed the association between E.coli infections in PPROM .[73] These culture positive patients were treated with antibiotics according to antibiotic sensitivity test results.

The mean duration of hospitalisation of new born was 7.10 days in active management and in expectant management 8.49 days which is statistically significant. There was no significant difference in 1minute and 5 minutes Apgar score in both the groups. In the study by Naef et al, shows that there is no significant difference in hospital stay in both groups.[66] The incidence of RDS was high in active (73.90%) than in expectant management (26.10%) whereas the incidence of sepsis is 80% in expectant and 20% in active management. The incidence of Low birth weight is 70.59% in expectant group whereas it is 29.41% in active group which is not statistically significant. Even though there is increased incidence of hospitalisation in both

the groups there was no neonatal mortality. This is due to the early detection of the complications and timely intervention and appropriate treatment.

In the present study in 32 to 33 weeks 6 days group 7 patients (33.33%) were put in active group and 14 patients (66.66%) were put in expectant management. About 22.22% and 77.77% were delivered within 48 hours in active and expectant management respectively which is statistically significant. The maximum admission –delivery in this group was 128 hours. There was only one reported case of chorioamnionitis in expectant management. In 34 to 36 weeks 6 days also the admission –delivery interval in both modes of management were statistically significant. In the view of admission –delivery interval in both the groups, expectant management is the suggested method in 32 to 33 weeks 6 days group and active management is the suggested method in 34 to 36 weeks 6 days group. The mode of delivery, duration of hospitalisation the incidence of fever and abruptio placenta was not statistically significant in both the groups.

In the analysis of admitted babies the duration of hospitalisation of newborn for more than 5 days were 26.3 % and 74.7% in active and expectant management in   32 to 33 weeks 6 days group which is statistically significant. Whereas the duration of newborn hospitalisation in 34 to 36 weeks 6 days group in both modes of management is not statistically

significant. The incidence of RDS was 83.3% in active and 16.7% in expectant group in 32 to 33 weeks 6 which is statistically significant whereas in 34 to 36 weeks 6 days group RDS incidence was 70.6% and 29 .4% in active and expectant group which is not statistically significant. The incidence of sepsis, prematurity and other neonatal complications in both the groups and both modes of management were not statistically significant. Overall there is increased adverse outcomes were noted in active management in 32 to 33 weeks 6 days. However in 34 to 36 weeks 6 days there was no significant hospitalisation and the neonatal outcome in both mode of management was similar .so when considering the maternal factors in active and expectant management in this group, there is no added advantage of expectant management in 34 to 36 weeks 6 days in this study. In the study by Neerof et al also suggested that there needs a natural break point at 34 weeks of gestation in the mode of management in preterm premature rupture of membranes between 32 and 36 completed weeks pertaining to the view of neonatal morbidity.[67]

SUMMARY

Summary

PPROM is preterm premature rupture of membranes that occur before initiation of labour and before term. This alters the normal labour process and leads to wide range of complication in mother as well as foetus and the neonate after delivery. Hence a prospective comparative study was conducted to find out the incidence of PPROM, examine the various modes of the treatment options and study the maternal and fetal outcome.

This study was conducted in Govt. Kasturba Hospital, Triplicane, Madras Medical College, Chennai in the period of December2012 to November 2013. Pregnant women with gestational week of 32-36 completed weeks (37 weeks) with confirmed ROM, Singleton pregnancy, Primi and multigravida in the age group between 15-35 years were included and multiple pregnancies with severe complications were excluded. Sample size was calculated to 108 by using 7.72% prevalence of PPROM and 5% precision.

Study participants were included randomly in active and expectant management groups. The admission, management procedures and events during delivery and puerperium and neonatal outcome were studied. Statistical analysis was done using SPSS version 12. Proportion, nonparametric test and independent sample't' test were used. Ethical committee approval was obtained from Institutional Ethics Committee from Madras Medical College.

The incidence of PPROM was 3.56%. It was high in 34-36 weeks of gestation. And 55 clients were put up in active management and 53 in expectant management. The majority of the study participants were in the age group of 20-25yeras (57%). And 26% were in the age group of 25-30 years. Most of the study participants (39.8%) were studied 6th to 10th standard. Among the study participants 61.1% were semi-skilled workers. Primigravida were 69 in number. The average gestational weeks of study participants was 34.7(SD: 1.23 & 95% CI:34.47-34.94).

The mean MRO duration during admission was 14.91 hours, admission to delivery interval 15.81 hours and MRO to delivery interval 30.72 hours. Height, weight and age group was not statistically significant between active and expectant management of PPROM. But Socio economic status has a significant association between management groups.

The highest number of mothers (94.44%) got admitted in > 24 hrs of MRO but it was highest in <6 hrs in expectant management if comparing between the group. Among delivered with in < 6hrs after hospital admission, 88.24% in active and 11.76% in expectant management group. These differences were statistically significant. E-coli was identified in 9.25% of high vaginal swabs.

Oxytocin induction was high (49) in active management than in expectant management (6). Only three patients were given PGE-2 gel for induction in active management.

The duration of mother stay in the hospital more than 5 days was high in expectant management (54.05%) than in active management (45.95%). The duration of mother hospitalization and post-operative complications like fever, abruption placenta were not statistically associated with active and expectant management (p>0.05).

The duration of neonate hospitalisation was more than 5 days in 62.26% in expectant management and 37.74% in active management. The same was less than 5 days in 63.34% in active and 36.36% in expectant management. The difference was statistically significant (p=0.007). Apgar score of 1 min and 5 min between the treatment groups was not statically significant.

In the 32- 33 weeks 6 days completed group, among the study participants in both modes of management the admission – delivery interval is statistically significant. The duration of neonate hospitalisation and the incidence of RDS in both modes of management are also statistically significant. Though the incidence of sepsis is more, it is not statistically significant. This shows that PPROM patients in 32- 33 weeks 6 days completed group can be put in expectant line of management.

In the 34 to 36 weeks 6 days group the admission –delivery interval in both modes of management were statistically significant. The duration of newborn hospitalisation in 34 to 36 weeks 6 days group in both modes of management is not statistically significant. The neonatal outcomes in both modes of

management were not statistically significant. So when considering the maternal factors and fetal condition these patients can be put in active line of management.

CONCLUSION

Conclusion

PROM is not uncommon in pregnancy. The incidence of PPROM was 3.56% in our study. It is common in lower socio economic status and 20-25 years of pregnant women. The management of PPROM depends upon the time of admission after MRO, clinical condition of fetus and mother and the gestational age of the mother. The delay in mother admission after MRO increases the chances of maternal and neonatal outcomes and determines the line of management.

Expectant management is the suggested management in PPROM patients with gestational age of 32-33weeks 6 days and active line of management is for 34-36 weeks 6 days. Also conversion from expectant to active management is also considered based upon maternal and fetal conditions. This will reduce the the neonatal complications and duration of hospitalisation. So better 'Rooming in" is also possible.

The respiratory distress syndrome, LBW and sepsis are major complication of PPROM in preterm babies and the maternal complication was less evident in both the treatment groups. Case control studies are suggested to find out the causes for PPROM. So it provides chances to prevent PPROM in future.

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PROFORMA

Name:

Age;

Ip no:

Educational status:

Income: occupation: SE status:

DoA: ToA:

LMP:

EDD:

Scan EDD   GA(LMP/ Scan);

Ht:

Wt: BMI:

Admitted for

Men h/o:

Mar h/o:

Obs h/o:

Past h/o:

Examination:

Temp:

Pulse:

BP:

CVS:

RS:

Abdomen

Speculam:

Nitrazine paper test:

Fern test;

Vaginal:

 Hb:

Total count:

Differential count:

ESR:

Urine alb/sugar:

Bd g/t:

HIV:

VDRL:

High vaginal swab:

USG:

CTG:

Drugs:

Mode of management:

Mode of onset:

Date of Delivery:

Time of Delivery:

Mode of delivery:

Signs of chorioamnionitis

If c/s ind:

Baby weight:

Apgar score:

NICU admission if any ind and durationof stay;

Post op/post natal period:

DoD:

A STUDY ON ACTIVE VERSUS EXPECTANT MANAGEMENT AND

BY 2212617 . M.D. OBSTETRICS AND GYNAECOLOGY VIJAYALAKSHMI N. NATARAJAN

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37 WEEKS OF PREGNANCY

Dissertation submitted to

The Tamil Nadu Dr. MGR University

Chennai

In partial fulfilment of the regulations

For the award of the degree of

M.S.

OBSTETRICS AND GYNAECOLOGY

MADRAS MEDICAL COLLEGE

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A STUDY ON ACTIVE VERSUS EXPECTANT MANAGEMENT AND PERINATAL OUTCOME OF PRETERM PREMATURE RUPTURE OF MEMBRANE BETWEEN 32- 37 WEEKS OF PREGNANCY Dissertation submitted to The Tamil Nadu Dr. MGR University Chennai In partial fulfilment of the regulations For the award of the degree of M.S. OBSTETRICS AND GYNAECOLOGY MADRAS MEDICAL COLLEGE CHENNAI APRIL 2014 Introduction Pregnancy is considered a unique, physiologically normal episode in a women's life. While most pregnancies and births are uneventful, all pregnancies are at risk. Around 15% of all pregnant women develop a potentially life-threatening complication which in turn require a major obstetrical intervention to survive.1 Labour is a...

Annexure-II

Master Chart

SN	Name	Age	IP NO	Gra	para	live	Abortion	DOA	TOA	LMP	EDD	GA	Clinical GA	USG GA	Mng	HVS	Ht	WT	Edu	SE	MRO admcont	Duration MRO	Oxytocin ind
	Venkateswari	24	15745	1	0	0	0	30.9.13	5pm	25.1.13	2.11.13	35	34	35	Act	0	152	56	3	3	36	4	1
2	Chitra	23	17749	1	0	0	0	2.10.13	8.35pm	20.1.13	27.10.13	36	36	36	Exp	0	150	69	3	5	11	2	0
3	Meena	28	15366	1	0	0	0	29.8.13	11.36am	20.12.13	27.9.13	36	36	36	Exp	0	163	67	2	4	4	1	0
4	Nazeema begam	25	15130	1	0	0	0	26.8.13	1.15pm	4.12.12	11.9.13	36	36	36	Act	0	158	58	2	4	31	4	0
5	Nathiya	28	14885	1	0	0	0	22.8.13	8.50am	23.12.12	20.9.13	35	35	35	Exp	0	155	70	4	5	6	1	0
6	Ali Fathima	23	15192	2	1	1	0	26.8.13	2am	26.12.12	2.10.13	34	34	34	Exp	0	160	58	1	5	6	1	0
7	Pavithra	20	15884	1	0	0	0	5.9.13	5.50pm	24.12.12	30.9.13	36	36	36	Exp	0	159	52	4	5	8	2	1
8	Anandavalli	27	14367	1	0	0	0	30.8.13	9am	17.12.12	24.9.13	36	36	36	Act	0	167	73	3	4	4	1	1
9	Mahalakshmi	27	15817	1	0	0	0	4.9.13	1.30pm	27.12.13	4.10.13	36	36	36	Act	0	158	67	3	5	10	2	1
10	Meena	25	17933	4	2	2	1	4.10.13	9.45pm	30.1.13	7.11.13	36	36	36	Act	1	151	53	3	5	7	2	1
11	Poonam	20	18064	1	0	0	0	7.10.13	12.10am	5.2.13	12.11.13	36	36	36	Act	0	165	69	4	4	5	1	1
12	Kalaimani	26	17980	3	1	1	1	6.10.13	5pm	13.2.13	20.11.13	35	35	35	Act	0	157	75	2	4	37	4	1
13	Devikala	23	15568	1	0	0	0	1.9.13	2am	22.12.13	29.9.13	36	36	36	Act	0	159	61	3	5	28	4	1
14	Nithya	20	15992	1	0	0	0	7.9.13	3pm	5.1.13	12.10.13	35	35	35	Act	0	150	56	2	3	24	3	1
15	Monika	24	15621	1	0	0	0	30.9.13	5.30pm	21.2.13	28.11.13	33	33	33	Exp	0	168	51	2	5	12	2	0
16	Roseline malar	25	14421	1	0	0	0	27.9.13	6am	15.12.12	22.10.13	36	36	36	Act	2	156	75	1	5	18	3	1
17	Bhuvaneswari	29	15681	1	0	0	0	4.9.13	5pm	9.1.13	17.10.13	34	34	34	Exp	0	150	74	3	4	5	1	0
18	sivagami	22	15938	1	0	0	0	6.9.13	10am	1.1.13	8.10.13	36	36	36	Act	0	164	49	3	5	3	1	1
19	Kalaiarasi	20	16023	1	0	0	0	7.9.13	9pm	28.12.12	6.10.13	36	36	36	Act	0	164	64	3	5	7	2	1
20	Parveen	25	16005	1	0	0	0	8.9.13	1am	13.1.13	20.10.13	34	34	34	Exp	0	159	70	2	5	1	1	0
21	Lakshmidevi	26	16046	4	0	0	3	8.9.13	2am	5.9.13	16.10.13	35	35	35	Act	0	166	57	2	4	12	2	1
22	Deepa	22	15963	2	1	1	0	9.9.13	6.15pm	21.1.13	28.10.13	33	33	33	Exp	0	153	74	1	5	4	1	0
23	Dhara	21	16266	1	0	0	0	22.9.13	8.30am	15.1.13	22.10.13	36	36	36	Act	1	157	58	1	5	9	2	1
24	Leela	24	16506	1	0	0	0	26.9.13	2,55pm	24.1.13	31.10.13	35	35	35	Exp	0	162	68	4	4	2	1	0
25	Mejina banu	22	17145	2	1	1	0	24.9.13	7.15am	20.1.13	27.10.13	36	36	36	Act	0	169	54	3	5	4	1	1
26	Anandalakshmi	24	14548	1	0	0	0	16.8.13	9.20pm	24.12.12	1.10.13	33	33	33	Exp	0	154	50	2	5	2	1	1
27	Banu	32	14560	5	2	1	2	17.8.13	10.15am	15.12.12	22.9.13	34	34	34	Exp	0	153	72	2	5	12	2	0

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SN	PGE2 gel	DOD	TOD	No of Induction	mode delivery	Indication	Duration of stay_M	Duration of stay-B	Sex of the baby	BGA	BW	Apgar 1m	Apgar 5m	Septecemia	RDS	LBW	Preterm	Asphyxia	Hypoglycemia	NEC	Others	Mat-pueur	Fever	Tachycardia	Foul VD	Abruption	Chorio
1	0	1.10.13	1.50am	2	1	0	3	0	2	4	2	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2	0	3.10.13	11.45pm	0	2	4	10	0	1	5	4	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
3	0	29.8.13	2.50pm	0	1	0	5	0	2	5	4	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4	1	26.8.13	7.30pm	0	1	0	3	0	1	5	2	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5	0	22.8.13	5.30pm	0	1	0	5	0	1	4	3	6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6	0	27.8.13	4.07pm	0	1	0	6	7	1	3	3	4	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0
7	0	5.9.13	10.30pm	1	1	0	5	0	1	5	2	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8	0	30.8.13	11.30am	1	1	0	3	3	2	5	4	6	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0
9	0	4.9.13	7pm	1	2	4	9	0	2	5	4	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
10	0	5.10.13	12.15am	1	1	0	3	5	2	5	4	6	7	0	0	0	0	0	0	0	1	0	0	0	0	0	0
11	0	7.10.13	5.30am	1	1	0	3	0	1	5	3	6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12	1	7.10.13	11pm	1	2	4	8	5	1	5	3	7	8	0	0	0	0	0	0	1	0	0	0	0	0	0	0
13	0	1.9.13	6.30am	1	2	2	8	7	1	5	3	7	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0
14	0	7.9.13	8.15pm	1	2	2	3	5	1	4	3	6	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0
15	0	1.10.13	9am	0	1	0	5	8	1	2	2	6	7	0	0	0	0	0	1	0	0	0	0	0	0	0	0
16	0	27.9.13	4pm	1	2	4	4	7	2	5	3	6	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0
17	0	5.9.13	4pm	0	1	0	5	8	1	2	2	4	6	0	0	1	0	0	0	0	0	0	0	0	0	0	0
18	0	6.9.13	2pm	1	1	0	5	0	1	5	4	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
19	0	8.9.13	4.45am	2	1	0	4	0	2	5	3	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20	0	8.9.13	7am	0	1	0	4	0	2	3	3	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
21	0	8.9.13	12pm	1	2	2	3	3	2	3	3	7	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0
22	0	10.9.13	6pm	0	1	0	5	6	1	3	2	6	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0
23	0	22.9.13	1.45pm	1	1	0	4	0	2	5	4	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
24	0	26.9.13	11.10pm	0	2	2	9	0	2	4	3	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
25	0	24.9.13	4pm	2	1	0	3	0	1	5	3	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
26	0	17.8.13	11.30pm	1	1	0	4	9	2	2	2	6	7	0	0	0	1	0	0	0	0	0	0	0	0	0	1
27	0	17.8.13	6pm	1	1	0	6	7	2	3	3	6	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0

SN	Name	Age	IP NO	Gra	para	live	Abortion	DOA	TOA	LMP	EDD	GA	Clinical GA	USG GA	Mng	HVS	Ht	WT	Edu	SE	MRO admcont	Duration MRO	Oxytocin ind
28	Gayathri	25	14579	1	0	0	0	17.8.13	6.15pm	3.12.12	10.9.13	35	35	35	Exp	0	161	60	2	5	3	1	0
29	Amudha	25	14826	4	2	2	1	20.8.13	11.30.pm	5.1.13	12.10.13	33	33	33	Exp	1	169	62	3	5	10	2	0
30	Inbarasi	22	14672	1	0	0	0	22.8.13	1pm	25.12.12	2.10.13	34	34	34	Exp	0	157	65	4	4	3	1	0
31	Kowsar	22	14882	2	1	1	0	26.8.13	11pm	20.12.12	27.9.13	36	36	36	Act	0	155	50	1	4	10	2	1
32	kanimozhi	20	15066	1	0	0	0	25.8.13	3am	25.12.13	1.10.13	35	35	35	Exp	0	168	60	2	5	4	1	0
33	Adhilakshmi	27	15474	2	1	0	0	29.8.13	10pm	8.1.13	15.10.13	34	34	34	Exp	0	156	51	1	3	4	1	0
34	Dhavamani	25	4662	2	0	0	1	5.2.13	11.10am	30.5.12	7.3.13	35	35	35	Exp	1	152	70	2	5	12	2	0
35	Devika	34	16100	2	1	1	0	12.6.13	5.10.am	15.10.12	22.7.13	34	34	34	Act	0	161	52	3	5	24	3	1
36	Girija	21	16328	1	0	0	0	14.6.13	10.05am	24.10.12	31.7.13	33	33	33	Exp	1	150	67	3	4	1	1	0
37	Revathy	24	16213	1	0	0	0	16.6.13	9.25pm	5.11.12	12.8.13	32	32	32	Exp	0	153	59	4	5	12	2	0
38	sasikala	22	14318	1	0	0	0	18.6.13	5.05pm	20.10.12	27.7.13	34	34	34	Exp	0	159	72	2	5	21	3	0
39	Renuka	28	10716	2	0	0	1	20.6.13	5.45pm	30.10.12	7.8.13	33	33	33	Act	0	153	74	2	4	45	4	0
40	Sharmila	21	10956	1	0	0	0	24.6.13	9.30am	4.11.12	1.8.13	33	33	33	Exp	0	165	70	1	4	1	1	0
41	Tamizhyendhi	30	12024	1	0	0	0	25.7.13	12.25pm	28.11.12	5.9.13	34	34	34	Exp	0	164	66	1	5	1	1	0
42	Kasthuri	23	12740	1	0	0	0	27.7.13	5.35pm	14.12.12	27.9.13	32	32	32	Exp	0	160	75	2	4	9	2	0
43	Sindhu	22	11330	2	0	0	1	1.7.13	8.45pm	10.11.12	17.8.13	33	33	33	Act	0	157	63	2	5	43	4	1
44	Jayalakshmi	20	12421	1	0	0	0	8.7.13	6.15pm	12.11.12	19.8.13	34	34	34	Act	0	166	60	2	5	25	4	1
45	Thenmozhi	27	17832	2	1	1	0	3.8.13	3.40pm	7.12.12	14.9.13	34	34	34	Exp	0	150	65	2	5	11	2	0
46	Salma Afrose	21	17458	1	0	0	0	27.9.13	7.40am	16.1.13	23.10.13	36	36	36	Act	0	156	53	2	5	20	3	1
47	Rekha	21	16603	1	0	0	0	6.9.13	10.45am	2.1.13	9.10.13	35	35	35	Act	0	166	52	1	4	14	3	1
48	Rukmani	31	17543	1	0	0	0	30.9.13	10.29am	19.1.13	26.10.13	36	36	36	Act	0	153	55	1	5	10	2	1
49	Devi	23	17869	5	0	0	4	4.9.13	4.37am	14.1.13	21.10.13	33	33	33	Exp	0	160	74	2	5	44		0
50	Nandhini	32	13567	1	0	0	0	9.8.12	10.15pm	28.11.12	5.9.13	36	36	36	Act	0	157	55	1	4	2	1	1
51	Padmavathy	29	14435	2	1	1	0	23.8.13	1.12am	20.12.12	27.9.13	35	35	35	Exp	2	164	68	2	5	7	2	0
52	Anitha	22	14588	1	0	0	0	24.8.13	1.10 am	27.12.12	4.10.13	34	34	34	Exp	0	154	72	2	4	13	3	0
53	Vanitha	25	19985	1	0	0	0	1.11.12	1.15pm	28.2.12	7.12.12	35	34	35	Exp	0	155	66	2	4	1	1	1
54	Deepa	21	20029	2	1	1	0	2.11.12	7.10am	4.3.12	11.12.12	34	34	34	Exp	0	159	66	1	5	6	1	0

SN	PGE2 gel	DOD	TOD	No of Induction	mode delivery	Indication	Duration of stay_M	Duration of stay-B	Sex of the baby	BGA	BW	Apgar 1m	Apgar 5m	Septecemia	RDS	LBW	Preterm	Asphyxia	Hypoglycemia	NEC	Others	Mat-pueur	Fever	Tachycardia	Foul VD	Abruption	Chorio
28	0	18.8.13	9 .30am	1	1	0	8	0	2	4	3	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
29	0	22.8.13	2.35am	0	1	0	5	9	1	2	2	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30	0	22.8.13	9.15pm	0	1	0	3	7	2	3	3	6	7	1	0	0	0	0	0	0	0	0	0	0	0	0	0
31	0	27.8.13	3am	1	1	0	3	0	2	5	3	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
32	0	25.8.13	8:00 PM	0	1	0	5	0	1	4	3	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
33	0	30.8.13	11.30pm	0	1	0	6	0	2	3	3	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
34	0	6.2.13	3.15am	0	1	0	6	5	2	3	3	7	8	0	1	0	1	0	0	0	0	0	0	0	0	0	0
35	0	12.6.13	4.07pm	1	1	0	3	0	1	3	3	7	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0
36	0	17.6.13	2.30pm	0	1	0	3	10	2	2	2	7	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0
37	0	21.6.13	4.10pm	0	1	0	4	15	1	1	2	6	7	0	0	0	1	0	0	0	0	0	0	0	0	0	0
38	0	20.6.13	10.35am	0	1	0	4	4	2	3	3	8	9	0	0	0	0	0	0	0	1	0	0	0	0	0	0
39	0	21.6.13	1.15am	0	1	0	4	12	2	2	2	5	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0
40	0	25.6.13	4.15pm	0	1	0	6	7	1	2	2	8	9	0	1	0	1	0	0	0	0	0	0	0	0	0	1
41	0	27.7.13	6.45am	0	1	0	5	8	1	3	2	8	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
42	0	28.7.13	8.30pm	0	1	0	6	12	2	1	1	5	8	0	0	0	1	0	0	0	0	0	0	0	0	0	0
43	0	2.7.13	2.10am	0	1	0	3	15	2	2	2	7	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0
44	0	9.7.13	1,05am	2	2	1	9	8	1	3	2	8	9	0	1	0	0	0	0	0	0	0	0	0	0	0	0
45	0	4.8.13	6.22pm	0	1	0	4	7	1	3	2	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
46	1	27.9.13	1.05pm	2	2	4	9	0	2	5	3	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
47	0	6.9.13	5.15pm	2	2	1	9	0	1	4	3	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
48	0	30.9.13	1.45pm	1	2	4	9	0	2	5	4	6	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
49	0	5.9.13	12.05am	0	2	2	10	13	2	2	2	6	7	0	0	1	0	0	0	0	0	0	0	0	0	0	0
50	0	10.8.13	2.35am	1	1	0	3	4	1	5	3	3	5	0	1	0	0	0	0	0	0	0	0	0	0	0	0
51	0	24.8.13	11.35pm	0	3	0	5	0	2	4	3	6	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0
52	0	26.8.13	2.34am	0	1	0	5	0	2	3	2	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
53	0	2.11.12	11.37am	1	2	4	9	0	1	4	3	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
54	0	2.11.12	11.10pm	0	1	0	5	9	2	3	2	5	6	0	0	0	0	0	0	1	0	0	0	0	0	0	0

SN	Name	Age	IP NO	Gra	para	live	Abortion	DOA	TOA	LMP	EDD	GA	Clinical GA	USG GA	Mng	HVS	Ht	WT	Edu	SE	MRO admcont	Duration MRO	Oxytocin ind
55	Manju	19	20004	1	0	0	0	1.11.12	7.22am	23.2.12	30.11.12	36	36	36	Act	0	158	66	2	5	44	3	11
56	Parimala	23	18933	1	0	0	0	4.11.12	6.30am	2.3.13	9.12.13	35	35	35	Exp	1	162	54	2	5	3	1	0
57	Mariammal	19	19358	2	1	1	0	23.10.13	8.05pm	5.3.13	12.12.13	33	33	33	Exp	0	152	56	3	5	18	2	0
58	Dhavamani	30	19287	3	2	2	0	22.10.13	11.40pm	11.40pm	27.11.13	34	34	34	Exp	2	156	52	3	5	10	2	1
59	Vani	28	18565	3	1	1	1	13.10.13	4.45am	4.45am	6.2.13	32	32	32	Act	0	156	61	2	4	7	2	0
60	Israth begam	19	19679	1	0	0	0	28.10.13	10.17am	10.17am	22.11.13	36	36	36	Act	0	154	52	2	5	18	3	1
61	Kamakshi	26	19542	2	1	1	0	26.10.13	6.45am	6.45am	22.11.13	36	36	36	Act	0	167	73	1	5	23	3	1
62	Rahima	21	19527	1	0	0	0	29.9.13	11.10pm	27.1.13	3.11.13	35	35	35	Act	0	152	56	1	5	18	3	1
63	Amaravathy	27	19391	2	1	1	0	24.10.13	11.05am	7.2.13	14.12.12	33	33	33	Exp	0	156	75	3	5	4	1	0
64	Chitra	24	13452	1	0	0	0	5.9.13	11.45pm	28.12.12	5.10.13	36	36	36	Act	0	156	67	1	5	18	3	1
65	Tamilselvi	23	7342	2	1	1	0	2.5.13	6.24am	4.9.12	11.6.13	34	34	34	Act	0	150	74	1	5	33	4	1
66	Selvi	18	7457	1	0	0	0	2.5.13	3.42am	20.8.12	27.5.13	36	36	36	Exp	0	165	75	1	5	7	2	0
67	Usharani	30	7641	2	1	1	0	6.5.13	5.10am	1.9.12	7.6.13	35	35	35	Act	0	151	74	2	4	13	3	1
68	kanimozhi	28	7787	1	0	0	0	10.5.13	2.55am	10.9.12	17.6.13	34	34	34	Exp	0	156	68	1	4	12	2	0
69	Mangai	25	7812	1	0	0	0	10.5.13	4.25am	28.8.12	5.6.13	36	36	34	Act	0	159	53	2	4	2	1	1
70	Ponni	21	8121	1	0	0	0	16.5.13	7.25am	4.9.12	11.6.13	36	36	36	Act	0	166	64	2	5	21	3	1
71	Sumathy	27	8146	2	1	0	0	16.5.13	11.35pm	12.9.12	19.6.13	35	35	35	Exp	1	151	64	1	5	7	2	0
72	Rajeswari	28	8264	1	0	0	0	21.5.13	8.12am	24.9.12	1.7.13	34	34	34	Exp	0	153	64	2	4	3	1	0
73	Badurnisha	23	8275	1	0	0	0	21.5.13	4.20pm	3.10.13	10.7.13	33	33	33	Exp	2	163	63	2	5	2	1	1
74	Radha	31	8494	3	1	1	1	26.5.13	10.20pm	14.9.12	21.6.13	36	36	36	Act	0	157	53	1	5	23	3	0
75	Menaka	26	8609	1	0	0	0	30.5.13	3.50am	25.9.12	2.7.13	35	35	35	Act	0	152	70	1	4	19	3	0
76	Jayalakshmi	24	8551	3	1	0	1	30.5.13	4.30am	10.10.12	17.7.13	33	33	33	Act	1	157	52	1	5	45	4	1
77	Munira	25	8594	1	0	0	0	2.6.13	2.35am	5.10.12	12.7.13	34	34	34	Exp	0	160	75	1	5	6	1	0
78	Kalpana	24	204	1	0	0	0	5.1.13	6.13am	24.5.12	1.3.13	32	32	32	Act	0	153	71	2	5	40	4	1
79	Selvi	25	343	1	0	0	0	6.1.13	12.15pm	5.5.12	12.2.13	35	35	35	Act	0	156	73	1	4	40	4	1
80	Pavithra devi	26	412	2	1	1	0	9.1.13	4.15am	30.4.12	7.2.13	36	36	36	Exp	0	162	61	2	5	8	2	0
81	sheela	28	645	1	0	0	0	12.1.13	7.25pm	5.5.12	12.2.13	36	36	36	Act	0	155	56	1	3	47	4	1
82	Geetha	18	699	1	0	0	0	15.1.13	8.15pm	20.5.12	27.7.13	34	34	34	Act	0	168	67	1	4	17	3	1

SN	PGE2 gel	DOD	TOD	No of Induction	mode delivery	Indication	Duration of stay_M	Duration of stay-B	Sex of the baby	BGA	BW	Apgar 1m	Apgar 5m	Septecemia	RDS	LBW	Preterm	Asphyxia	Hypoglycemia	NEC	Others	Mat-pueur	Fever	Tachycardia	Foul VD	Abruption	Chorio
55	0	1.11.12	10.35am	1	1	0	3	0	1	5	4	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
56	0	5.11.13	2.15pm	0	2	2	10	0	2	3	3	7	8	1	0	0	0	0	0	0	0	0	0	0	0	0	0
57	0	25.10.13	10.35am	0	1	0	4	10	1	2	2	4	5	1	0	0	0	1	0	0	0	0	0	0	0	0	0
58	0	24.10.13	5.15pm	1	1	0	5	24	1	3	2	1	4	0	1	0	0	0	0	0	0	0	0	0	0	0	0
59	0	18.10.13	12.05pm	0	2	2	9	12	1	1	2	4	5	0	1	0	1	0	0	0	0	0	0	0	0	0	0
60	0	28.10.13	1.40pm	1	1	0	3	0	2	5	4	5	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
61	0	26.10.13	9am	1	1	0	3	7	1	5	3	4	5	1	0	0	0	0	0	0	0	0	0	0	0	0	0
62	0	30.9.13	7.10am	2	2	1	8	0	1	4	3	4	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
63	0	27.10.13	8.25am	0	1	0	5	7	1	2	2	8	9	0	0	0	0	1	0	0	0	0	0	0	0	1	0
64	0	6.9..13	9.04am	2	1	0	3	4	1	5	3	6	7	0	0	0	0	0	1	0	0	0	0	0	0	0	0
65	0	2.5.13	1.18pm	1	1	0	3	7	2	3	3	8	9	0	1	0	1	0	0	0	0	0	0	0	0	0	0
66	0	4.5.13	5.45am	0	2	2	8	8	1	5	3	7	8	0	1	0	0	0	0	0	0	0	0	0	0	0	0
67	0	6.5.13	10.20am	1	2	4	10	7	2	4	3	6	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0
68	0	11.5.13	10.35am	0	2	3	10	10	2	3	2	4	6	0	0	0	0	1	0	0	0	0	0	0	0	0	0
69	0	10.5.13	9.27am	1	3	0	5	0	2	5	4	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
70	0	16.5.13	3.25pm	1	2	4	8	0	1	5	4	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
71	0	18.5.13	6.55pm	0	1	0	5	0	2	4	3	7	8	1	0	0	0	0	0	0	0	0	0	0	0	0	1
72	0	22.5.13	12.08pm	0	1	0	5	6	2	3	3	4	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
73	0	24.5.13	12.20pm	0	1	0	6	9	2	2	2	8	9	1	0	1	0	0	0	0	0	0	0	0	0	0	0
74	0	27.5.13	6.29am	1	1	0	3	0	1	5	4	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
75	0	30.5.13	5.13am	1	2	4	8	5	2	4	3	7	8	0	0	0	0	0	0	0	1	0	0	0	0	0	0
76	0	31.5.13	5.35pm	0	1	0	4	3	1	2	3	8	9	0	1	1	0	0	0	0	0	0	0	0	0	0	0
77	0	3.6.13	8.55pm	0	1	0	5	8	1	3	2	7	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0
78	0	4.1.13	11.48pm	1	1	0	3	12	2	1	2	5	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0
79	0	6.1.13	11.08pm	1	1	0	3	0	1	4	3	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
80	0	9.1.13	11.40pm	0	1	0	5	8	1	5	3	6	8	0	0	0	0	0	0	1	0	0	0	0	0	0	0
81	0	13.1.13	5.30am	1	2	1	8	0	2	5	3	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
82	0	15.1.13	11.58pm	1	1	0	3	8	2	3	3	4	6	0	1	0	0	0	0	0	0	0	0	0	0	0	0

SN	Name	Age	IP NO	Gra	para	live	Abortion	DOA	TOA	LMP	EDD	GA	Clinical GA	USG GA	Mng	HVS	Ht	WT	Edu	SE	MRO admcont	Duration on MRO	Oxytocin ind
83	Chandrakala	25	721	1	0	0	0	14.1.13	7.50pm	5.6.12	12.3.13	32	32	32	Exp	0	168	56	1	4	1	1	0
84	suganya	23	806	1	0	0	0	17.1.13	1.05am	21.5.12	28.2.13	34	34	34	Exp	3	154	55	2	5	6	1	1
85	Vimala	29	821	3	1	1	1	23.1.13	4.50am	15.5.12	22.2.13	36	36	36	Act	0	159	69	2	4	24	3	1
86	Umadevi	21	908	1	0	0	0	24.1.13	8.45pm	24.5.12	1.3.13	35	35	35	Act	0	158	58	2	5	23	3	0
87	Mogambika	23	1195	1	0	0	0	2.2.13	8.20pm	26.5.12	3.3.13	36	36	36	Exp	0	165	73	1	5	10	2	0
88	Sandiya	24	1211	1	0	0	0	4.2.13	10.50pm	27.5.12	4.3.13	36	36	36	Exp	0	153	74	1	5	1	1	0
89	Kuppammal	20	1345	1	0	0	0	7.2.13	9.15am	13.6.12	20.3.13	34	34	34	Exp	0	154	70	1	5	1	1	0
90	Parvathy	26	1724	1	0	0	0	16.2.13	1.45am	28.6.12	5.4.13	34	34	34	Act	0	157	57	1	4	24	3	1
91	Swapna	21	1821	4	2	2	1	18.2.13	12.45am	10.6.12	17.3.13	36	36	36	Exp	0	159	56	3	5	1	1	0
92	Sathya	23	2421	3	2	2	0	1.3.13	9.37am	20.6.12	27.3.13	36	36	36	Act	0	161	74	3	4	28	4	1
93	Vasanthi	23	12415	2	1	1	0	19.7.13	7.45am	28.11.12	5.9.13	33	33	33	Act	0	155	58	2	5	77	4	1
94	Kanthamani	25	2525	1	0	0	0	8.3.13	8.35am	11.7.12	18.4.13	34	34	34	Exp	1	158	59	4	5	6	1	0
95	Rosy	22	18942	1	0	0	0	13.10.13	1.30pm	1.2.13	8.11.13	36	36	36	Act	0	153	63	1	4	14	3	1
96	Selvi	29	19053	2	1	1	0	17.10.13	9.35pm	6.2.13	13.11.13	36	36	36	Act	0	152	73	2	4	17	3	1
97	Sumathy	25	19547	1	0	0	0	18.10.13	6pm	8.2.13	15.11.13	36	36	36	Act	0	163	69	1	4	23	3	1
98	Sugitha	28	13214	2	1	1	0	3.8.13	10.30am	6.12.12	13.9.13	34	34	34	Exp	0	154	50	1	5	3	1	0
99	Krithika	25	13116	1	0	0	0	4.8.13	2.10pm	24.11.12	1.8,13	36	36	36	Act	0	167	50	1	4	13	3	1
100	Renuka	24	13097	1	0	0	0	29.7.13	9.10pm	16.11.12	23.8.13	36	36	36	Act	0	156	69	2	4	21	3	1
101	Gayathri	21	12954	1	0	0	0	25.7.13	3.56pm	20.11.12	27.8.13	35	35	35	Exp	0	153	60	2	5	1	1	0
102	Roopa devi	25	19548	2	1	0	0	28.10.13	3.40pm	20.2.13	27.11.13	36	36	36	Exp	0	162	64	1	5	12	2	0
103	Madhubala	21	19360	1	0	0	0	23.10.13	8pm	5.3.13	12.12.13	33	33	33	Exp	1	156	49	2	5	3	1	0
104	Thenmozhi	29	18841	2	1	1	0	11.10.13	2.30pm	12.2.13	19.11.13	34	34	34	Act	0	161	61	1	5	25	4	1
105	Saranya	23	18894	2	1	1	0	12.10.13	5.13am	6.2.13	13.11.13	35	35	35	Act	0	159	65	2	4	19	3	1
106	Narfez	24	13032	1	0	0	0	28.7.13	4.05pm	1.12.12	8.9.13	34	34	34	Act	0	160	60	3	3	48	4	1
107	Bhavani devi	18	13945	1	0	0	0	18.8.13	2.50am	7.2.12	14.9.13	36	36	36	Act	0	150	72	3	5	26	4	1
108	Pandiselvi	25	16150	2	0	0	1	14.9.13	7.40am	10.1.13	17.10.13	36	36	36	Exp	0	150	54	1	4	2	1	0

x

SN	PGE2 gel	DOD	TOD	No of Induction	mode delivery	Indication	Duration of stay_M	Duration of stay-B	Sex of the baby	BGA	BW	Apgar 1m	Apgar 5m	Septecemia	RDS	LBW	Preterm	Asphyxia	Hypoglycemia	NEC	Others	Mat-pueur	Fever	Tachycardia	Foul VD	Abruption	Chorio
83	0	18.1.13	12.50am	0	1	0	5	7	2	1	2	4	5	1	0	0	0	0	0	0	1	0	0	0	0	0	0
84	0	18.1.13	11.55pm	0	1	0	5	4	1	3	3	8	9	0	0	0	1	0	0	0	0	0	0	0	0	0	0
85	0	23.1.13	10.40am	1	1	0	3	8	1	5	3	7	8	0	0	0	0	0	0	1	0	0	0	0	0	0	0
86	0	25.1.13	6.30am	1	1	0	3	9	1	4	3	7	8	0	1	0	0	0	0	1	0	0	0	0	0	0	0
87	0	3.2.13	10.45am	0	1	0	5	7	1	4	3	7	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0
88	0	5.2.13	12.45pm	0	1	0	9	7	2	5	3	7	9	0	0	0	0	0	0	1	0	0	1	0	0	0	0
89	0	8.2.13	11.30pm	0	1	0	6	6	1	3	3	8	9	0	0	1	0	0	0	0	0	0	0	0	0	0	0
90	0	16.2.13	9.40am	1	1	0	3	0	2	3	3	6	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
91	0	18.2.13	11.30pm	0	1	0	5	0	1	5	5	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
92	0	1.3.13	1.10pm	1	2	1	8	6	1	5	4	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
93	0	19.7.13	12.05pm	1	1	0	7	12	2	2	2	4	7	0	1	1	0	0	0	0	0	0	0	0	0	0	0
94	0	9.3.13	6.28am	0	1	0	5	11	2	3	2	7	8	0	0	1	0	0	0	0	0	0	0	0	0	0	0
95	0	13.10.13	4.03pm	1	2	4	8	6	1	5	4	2	5	0	0	0	0	1	0	0	0	0	0	0	0	0	0
96	0	18.10.13	3.15am	1	1	0	5	0	2	5	5	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
97	0	19.10.13	4.17am	2	1	0	5	0	1	5	4	7	9	0	0	0	0	0	0	0	0	0	0	0	0	0	0
98	0	6.8.13	11.40am	0	2	2	14	10	1	3	2	5	7	0	0	1	0	0	0	0	0	0	0	0	0	0	0
99	0	4.8.13	8.55pm	1	1	0	5	5	1	5	3	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0
100	0	30.7.13	12.20am	1	1	0	4	8	1	5	3	4	6	0	0	0	1	0	0	0	0	0	0	0	0	0	0
101	0	29.7.13	9.15pm	0	2	2	14	4	2	4	3	6	8	0	0	0	1	0	0	0	0	0	0	0	0	0	0
102	0	30.10.13	1.25am	0	1	0	6	9	2	5	3	4	6	0	0	0	0	1	0	0	0	0	0	0	0	0	0
103	0	24.10.13	9.05pm	0	1	0	5	8	2	2	2	6	7	1	0	1	0	0	0	0	0	0	0	0	0	0	0
104	0	11.10.13	5.20PM	1	1	0	3	8	1	3	2	6	7	0	1	0	0	0	0	0	0	0	0	0	0	0	0
105	0	12.10.13	12.07pm	1	1	0	4	3	2	4	4	7	8	1	1	0	0	0	1	0	0	0	0	0	0	0	0
106	0	28.7.13	10pm	1	1	0	7	8	1	3	2	5	7	0	0	0	0	0	0	0	0	0	0	0	0	0	0
107	0	18.8.13	1.52pm	1	1	0	4	8	1	5	3	3	5	0	0	0	0	1	0	0	0	0	0	0	0	0	0
108	0	16.9.13	6.20am	0	1	0	5	0	2	5	3	7	8	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Code

HVS   :   0-No growth, 1-E-Coli, 2.S.Aureus. 3. Klebsiella

Education   :   1- <6th STD, 2- 6-10 STD, 3- 10-12 STD, 4- Degree

SE status   :   1-Administrative, 2-Professional, 3. Skilled 4-Semi skilled-Fixed, 5-4-Semi skilled-Daily wages

Duration of MRO   :   1- <6hrs, 2- 6-12 hrs, 3- 12-24 hrs, 4- >24hrs

Oxytocin/PGE induction: 0- Not given, 1- Given

Mode of Delivery   :   1-Labour Naturals, 2-LSCS, 3-Forceps delivery

Indication for LSCS   :   1. Failure to progress, 2.Breech with oligohydraminos, 3- Fetal distress, 4- Severe Oligohydramnios.

Sex of the baby   :   1-Boy, 2-Girl

Baby Gestational Age   :   1-32, 2-33, 3-34, 4-35, 5-36.

Baby weight   :   1-<1.5 kgs,2- 1.5 to 2kgs, 3- 2-2.5 kgs, 4- >2.5 kgs

Septicemia, RDS, LBW, preterm, Asphyxia, Hypoglycemia, NEC,Others, Maternal puerperium, Fever, Tachycardia, Foul VD, Abruption,

Chorioamnionitis   :   0-Not present, 1-present.