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Efficacy of Amnioinfusion for meconium stained liquor in labour in a rural hospital.

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Abstract: *Incidence of meconium stained liquor is about 9.5% -25% of all deliveries. Incidence of placental and body staining is 5 - 10%. It probably indicates previous episode of intrauterine hypoxia or a state of compensated fetal distress. 5 - 12 % develop Meconium aspiration syndrome, a life threatening respiratory disorder which results from aspiration of meconium into the lungs and its perinatal morbidity and mortality ranges from 4 % - 40 %. prevention of meconium aspiration syndrome remains the major objective for obstetricians and neonatologists. Hence this study of amnioinfusion and its effect on maternal and perinatal morbidity and mortality in women with meconium stained liquor during labour was conducted.* ***Objectives:*** *To find out the efficacy of amnioinfusion in meconium stained liquor during labour . To study neonatal morbidity and mortality by assessing Apgar score at birth and NICU admission.* ***Material And Methods :*** *In this study 60 pregnant women in labour with meconium stained liquor were included .They underwent amnioinfusion and fetal outcome by apgar score at 1 min and 5 min , admission to NICU were taken into consideration and analysed.* ***Results:*** *In our study 76.5% had high risk factors like PIH ,IUGR , anaemia , 36% had fetal heart variations and 42.8% needed NICU admission. 60% of the cases were multigravida with bishop's score >6 . All had full term normal delivery. Other 40% were primigravidas of which 30% had LSCS and 10% had instrumental deliveries. Average birth weight was 3kg. 41% babies had 0-6 apgar score at 1 min and 59% had 7-10 apgar at 5 minutes. depressed babies were admitted in NICU. There was 5% perinatal mortality in our study.* ***Conclusion:*** *Amnioinfusion in active labour is associated with improvement in perinatal outcome most probably due to dilution in meconium and relief of oligohydramnios. There was a reduction in the rate of caeserean section for fetal distress and overall meconium aspiration syndrome and NICU admissions thereby reducing the perinatal morbidity and mortality.*

Keywords*: Amnioinfusion , Meconium aspiration syndrome , Caeserean section , perinatal outcome.*

I. Introduction

Significance of meconium stained liquor is widely debated.Though 5 -25% of all deliveries have meconium stained liquor (Voltern 1687) , Miller[1] stated the presence of meconium in the amniotic fluid without FHR variation or fetal acidosis is not a sign of fetal distress per se. Leonard JL[2] 1962 stated that if meconium stained amniotic fluid (MSAF) alone is considered as an indicator of intervention then 42% extra caesereans would be necessary. There are three theories[3] to explain fetal passage of meconium, one is in response to hypoxia , meconium is passed and signals fetal compromise. secondly it represents normal GIT maturation under neural control. Third it is associated with vagal stimulation from common but transient umbilical cord entrapment and resultant increased peristalsis and results in meconium stained liquor with FHR variation in 10 -15% [4] , 5 - 12% develop Meconium aspiration syndrome (MAS) , a life treatening respiratory disorder which contributes to neonatal morbidity and mortality.

Meconium in greek language means substance resembling poppy juice [5] and contains GIT secretions ,bile juice ,cellar debris , amniotic fluid swallowed vernix caseosa, lanugo,blood .It can be early, late and old or thin, moderate and thick meconium based on timing and consistancy[6] and takes 4 - 6 hrs[7] to stain fetal body and placenta.Many studies have proved meconium stained liquor perse is a poor predictor of fetal asphyxia, acidosis and neonatal outcome [8]. Thick meconium with abnormal FHR increases chances of developing fetal acidemia to 88% and perinatal mortality [8] to 32% , 30% at 40wks and 50% at 42 wks.

To prevent the deleterious effects of meconium aspiration , many measures have been suggested a) screening and monitoring of high risk cases as they are at risk of uteroplacental insufficiency b) oropharyngeal suction was advocated by carson and co before delivery of shoulders c) gastric suctioning of meconium stained infants. d) amnioinfusion i.e. clinical application of transcervical saline which was introduced by Miyazaki and co-workers[9] as an intrapartum procedure for relief of variable deceleration and to dilute or washout thick meconium prophylactically and it initself will also accerelate the labour process.

II. Materials And Methods :

This prospective study was done in Adichunchungiri institute of medical sciences over a period of 12 months and included 60 cases of booked and unbooked pregnant women in labour with meconium stained liquor. Abnormal presentations , intrauterine death ,previous caeserean , Antepartum haemorrhage , congenital abnormalities of the fetus were excluded from the study.Detailed history of demographic features , obstetric history, menstrual history, past and family history were taken. general physical examination was done. obstetrical examination for gestational age , lie ,presentation , position of the fetus ,FHR, duration, frequency of uterine contraction was done and documented. Pervaginal examination to assess Bishop's score ,pelvic adequecy to rule out Cephalopelvic disproportion was done. Admission test was taken for baseline FHR , any FHR variations.Basic investigations along with ultrasound for biophysical profile and doppler study were carried . After explaining the procedure, consent of the patient was taken .Under aseptic precautions red rubber catheter was intraduced transcervically into the uterine cavity , tip being kept above the presenting part . 500ml of normal saline was infused as bolus followed by 2 -3 ml/min till delivery . [Different authors followed different techniques- Adam 1989, Wenstrom 1989 , infused 1000ml over 20 -40 mins ; Hofmeyr 1998, Frazer 2005 used maximum of 800ml over 40min and 3ml/min to a total of 1500ml]

Labour was augmented with oxytocin infusion 5 units in ringer lactate and continuous CTG monitoring was done .Progress of labour monitored with vigilance. Second stage of labour was cut short with Vacuum or outlet forceps in most of the cases .Active management of III stage was done with 250 mcg of PGF2α or 0.25mg of methergin or 800mcg of misoprostol rectally . Apgar score was assessed at 1 and 5 min.

If any evidence of fetal distress or progress of labour was delayed , patient was taken for emergency LSCS . Outcome of the delivery was assessed by Meconium aspiration syndrome , NICU admissions ,perinatal morbidity and mortality.

III. Observation :

In our study , age group varied from 18 yrs to 30 yrs. 40% were primy and 60% were multigravidas.

A . Relationship Of Meconium Stained Liquor With Maternal Age

18 -25years	**25**	**42%**
25-30years	**35**	**58%**

Majority of the cases belonged to 25 -30 yrs age group.

B. Relationship Of Meconium Stained Liquor And Bishop's Score :

<6	**20**	**33%**
>6	**40**	**66.5%**

Majority of cases had bishop's score > 6 and 33%had< 6 on admission

C. Associated Risk Factors :

1	**anemia**	**10**	**16.5%**
2	**Pre eclampsia**	**15**	**25%**
3	**IUGR**	**6**	**10%**
4	**Oligohydromnios**	**6**	**10%**
5	**PROM**	**6**	**10%**
6	**Post dated**	**3**	**5%**
7	**No obvious cause**	**14**	**23.5%**

In this study 76.5 % had high risk factors and 23% were not associated with risk factors.

D . Mode Of Delivery :

		GROUP I WITH AMNIOINFUSION		GROUP II WITHOUT AMNIOINFUSION	
BISHOP'S SCORE		NO	%	NO	%
➢ 6	FTND	20	66.5%	12	40%
	INSTRUMENTAL DELIVERY	2	7%	6	20%
< 6	LSCS	8	26.5%	12	40%

In our study group I with amnioinfusion had 66.5% full term normal deliveries , 7% had outlet forceps delivery and 3% underwent LSCS (with Bishop's score < 6) whereas group II without amnioinfusion had 40% FTND , 20% had instrumental deliveries and 40% underwent LSCS with poor Bishop's score and for fetal distress.

E. Correlation Between Msaf And Apgar Score :

	APGAR SCORE	NO. OF BABIES (%)
1 MIN	0 - 6	24 (41%)
	7 - 10	36 (59%)
5 MIN	0 - 6	12 (21%)
	7 - 10	48 (79 %)

41% of babies had apgar score < 6 at 1 min . Only 21% had low apgar at 5 min. all babies who had low apgar score got admitted to NICU.

F. Correlation Between Msaf And Neonatal Morbidity And Mortality :

	Groyp I		Group II	
morbidity	**1**	**3%**	**12**	**40%**
mortality	**-**	**-**	**2**	**6.5%**

Neonatal morbidity was less in amnioinfusion group about 3% and mortality was nil, whereas 40% morbidity and 6.5 % mortality was seen in the control group. 13 babies were admitted to NICU for one week out of which 2 babies in the control group died due to meconium aspiration syndrome.

IV. Discussion :

Meconium stained amniotic fluid is always an enigmatic problem for which gynaecologist and neonatologist should be alert to prevent deadliest complication of MAS and its effect on multiple organs.

Our study almost correlates with Pravin goud[16] and ushakrishna , Miller , Paul meis[17] , Toshiotujikura where risk factors were present in 53% and in our study it was about 76.5% and 22.5% did not have any risk factors .

In our study with aminoinfusion 66.5% had FTND , 7% had instrumental deliveries , 8% underwent LSCS and only 3% had meconium aspiration which correlates with S.K. Sandhu's study[18] where 78.5% had FTND, 8.9% had instrumental deliveries and 13.6% underwent LSCS whereas in group II 40% had FTND, 20.5% had instumental deliveries whereas in group II 40% had FTND , 20.5% had instrumental deliveries and 40% underwent LSCS which almost correlates with study by Narang et al[19] where 54.2% had LSCS , 30.7% had FTND and 11.8% had instrumental deliveries.

The percentage of Neonatal morbidity in our study is 3% in group I and 40% in group II .Mortality was nil in amnioinfusion group and 6.5% in group II . This almost correlates with studies conducted by S.K.Sandhu who had 20% morbidity and 6% mortality due to meconium aspiration syndrome.

AUTHORS	NO. OF CASES WITH NEONATAL MORBIDITY
Dooley et al	21%
Ross et al	37%
Gregory et al	58%
Our study	3% (GROUP I) 40% (GROUP II)

V. Conclusion

Meconium aspiration syndrome is one of the major cause of neonatal morbidity and mortality .Advocating routine antenatal care , identification of risk factors for uteroplacental insuffiency , careful monitoring of patients antepartum, intrapartum fetal surveillance ,timely resusitation of the newborn by the paediatrician can decrease neonatal morbidity and mortality which can affect the psyche of the patient and of family perse. Different studies vary in views , but cochrane review by Hofmeyr GJ ,XUH 2010 puts forth that though there was no significant reduction in the primary outcomes of MAS , perinatal deaths/morbidity , there was certainly decrease in caeserean section for fetal distress, decrease in meconium below the vocal cords, decrease in NICU admissions and trend towards decrease in perinatal mortality.Though rare complications as cardiac failure , cord prolapse , abruption , amniotic fluid embolism , pyrexia have been reported (Dibble 92' , Dragich 91' , Hofmeyr 96) benefits outweigh against these rare small risks.

Hence this feasible costeffective (Moodley J et al) procedure should become standard practice in the management of meconium stained liquor to reduce the morbidity and mortality.

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