ORIGINAL RESEARCH PAPER

Obstetrics & Gynaecology

COMPARATIVE STUDY OF MATERNAL AND NEONATAL OUTCOMES OF LABOUR INDUCTION AT 40 WEEKS VERSUS EXPECTANT MANAGEMENT FROM 40 WEEKS TILL 40 WEEKS 6 DAYS IN TERM NULLIPAROUS WOMEN

KEY WORDS: Labour induction, Nulliparous , Expectant management.

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ABSTRACT

Background: The goal of obstetrics is a pregnancy that results in a healthy infant and a healthy mother.Much of the art of good obstetric care involves the delicate balance of avoiding caesarean delivery with all its attendant complications Methods : A Prospective randomized control study conducted at PESIMSR, KUPPAM, Comparing maternal and neonatal outcomes of labour induction at 40 weeks versus expectant management from 40 weeks till 40 weeks 6 days in term nulliparous women. The study protocol was approved by the institutional ethics board. Written informed consent was obtained from all study subjects. The women were categorized into group A and group B by computer-generated randomization each containing 64 nulliparous pregnant women. The primary outcome was maternal and neonatal outcomes in nulliparous women with labour induction at 40 weeks versus expectant management at 40 weeks till 40 weeks 6 days. **Results:** 128 nulliparous pregnant women who met the inclusion criteria was taken into the study after obtaining consent.The mean age of patients in induction group was 23.12 +/- 2.805 and in expectant group was 22.62 +/- 2.547 years.The mean period of gestation in expectant group was 40 weeks 4 days. 42.19% of participants in group A had a cesarean section, 1.56% had instrumental delivery and 56.25% had a normal vaginal delivery. Where as in group B, 23.43% had a cesarean section, 3.13% had instrumental delivery, and 73.44% had a normal vaginal delivery. There was no statistical significance between the mode of delivery in Group A and Group B (p=0.074). A longer duration of labour was noted in induction group compared to expectant group. P value 0.043, which is statistically significant. NICU admissions were high in an expectantly managed group compared to the induction group. But when APGAR scores were compared in both groups, no statistical significance was seen at 1 minute and 5 minutes. **Conclusion:** Labor induction at 40 weeks appears to be a safe alternative to expectant management for spontaneous labor beyond 40 weeks to deliver with no mortality and minimum morbidity to safeguard the mother and neonate, with precautions and evidence-based protocols to identify the risks and challenges to initiate the natural labor process.

INTRODUCTION

The timing of the onset of Labour may vary widely. Labour induction is a clinical intervention that has the potential to confer significant benefits to the mother and newborn when the continuation of pregnancy poses a risk or danger to the outcome of pregnancy.Thus induction of labour has become a common obstetric practice referring to the process of labour where the uterine contractions are initiated by medical and surgical means before the onset of spontaneous labour[1].

An important determinant of the pregnancy outcome is the timely onset of labor and birth. Both preterm and post-term births are associated with unfavorable maternal and neonatal outcomes. Prolonged gestation complicates 5% to 10% of all pregnancies and confers an increased risk to both the fetus and the mother [2-3].

Prolonged pregnancy beyond 40 weeks occurs in 1 in every ten pregnancies. The obstetric problems associated with post-term pregnancies include fetal hypoxia, IUD, still birth, meconium aspiration syndrome, cesarean section, prolonged labor, postpartum hemorrhage, traumatic birth, etc., complications associated with post maturity. The primary cause of perinatal morbidity and mortality in post-term pregnancy is presumed to be progressive utero-placental insufficiency[4-5].

The success of induction depends mainly on the cervical status at the start of the induction process. Induction of labour in the presence of an unripe cervix (cervical score).

Materials and Methods :

A prospective randomized control study was conducted at PES Institute of Medical Sciences and Research, KUPPAM, for a period of 18 months (from 1st January 2021 to 30th June 2022). During the study period all women attending antenatal clinics who were term (40 weeks) and willing to participate in the study were recruited. The study protocol was approved by the institutional ethics board. Written informed consent was obtained from all study subjects.

A detailed history was taken, a general and systemic examination was done. The obstetric examination was done to assess the lie, presentation, and fetal heart rate. The women were subjected to non-stress test (NST). Ultrasonography was done for interval growth, amniotic fluid index and to exclude any high-risk fetal factor if a recent growth scan was not available. The women were categorized into group A and group B by computer-generated randomization each containing 64 nulliparous pregnant women.

Group A: - 64 cases were studied for Induction of Labor at 40 weeks. Patients in induction group were induced based on the Bishop's score and followed up till their deliveries and through their hospital stay.

Group B: - 64 cases were studied as expectant management group in those pregnant women who were watched for spontaneous labor till 40 weeks 6 days of gestation; if a 19 woman has gone in for spontaneous labour, they were followed up to their deliveries and through their hospital stay. If a woman has not gone into spontaneous labour till 40 weeks 6 days, they were excluded from the study and were induced for labour.

Based on Bishop's score, patient was induced with either TAB.MIFEPRISTONE 200mg, Cerviprime gel, with Foley's catheter or with TAB.MISOPROSTOL. The method of further induction is decided and implemented according to Bishop's score. If induced with Cerviprime gel initially, If Bishop's

Score is unfavorable, then another dose of gel was used. Maximum 3 doses of gel were used at 6 hours interval. If induced with Foley's catheter intracervical, it was removed after 12 hours if not spontaneously expelled. If a post induction Bishop Score of 6 is favorable, Labour was accelerated with oxytocin and artificial rupture of membranes according to per vaginal examination findings. In the interval period fetal heart rate monitoring is done to assess fetal wellbeing.

Inclusion criteria: Nulliparous women with: A singleton fetus , A cephalic presentation , Gestational age between 40weeks-40 weeks 6 days .Willingness to participate in the study

Exclusion criteria: Medical contraindication to induction of labour , Medical contraindication to pregnancy being allowed to proceed to term ,Women with a known lethal fetal congenital abnormality , Women with a contraindication to labour or vaginal delivery (e.g., evidence of fetal compromise conditions that might cause a mechanical problem at delivery such as hydrocephalous or cystic hygroma; placenta praevia) ,Women with contraindication to expectant management.

Results:

128 women were included in the study who met the inclusion criteria. Half of them induced at 40 weeks of gestation (GROUP A), half were observed till 40 weeks 6 days gestation for spontaneous onset of labour (GROUP B) by computergenerated random numbers. These women were monitored for course of labour and augmented if needed, and followed up until delivery.The mean age of patients in induction group was 23.12 +/- 2.805 and in expectant group was 22.62 +/- 2.547 years.

In group A 42.19% of participants had a cesarean section, 1.56% had instrumental delivery and 56.25% had a normal vaginal delivery. Where as in group B, 23.43% had a cesarean section, 3.13% had instrumental delivery, and 73.44% had a normal vaginal delivery. There was no statistical significance between the mode of delivery in Group A and Group B (p=0.074) in terms of normal vaginal delivery and cesarean section.

In group A, 25 were induced with Cerviprime gel intracervical, 19 were induced with Foley's catheter intracervical, 4 patients were induced with Foley's intracervically along with intravaginal misoprostol 25mcg, and 20 participants were given Tab. Mifepristone 200mg per orally.

In the induction group (group A), 29 participants were augmented with Tab. Misoprostol, and 7 were augmented with Inj. Oxytocin, 28 participants have gone into labour without any augmentation. In expectant group (group B), 45 participants didn't need any augmentation, 10 were augmented with Tab. Misoprostol and 9 were augmented inj. Oxytocin. There was statistical significance in different methods of augmentation (p - 0.001).

It was found that IDI was lesser in participants induced with foley's with concurrent misoprostol induction and longer duration when tab. Mifepristone was used

The mean duration of labour in expectant group was 12 hours 45 minutes whereas the overall mean duration of labour in induction group was 17 hours 32 minutes. P value 0.04, which is statistically significant.

Table 1: Comparing the mean duration of labour:

group	Duration of labour	P value
Induction group (group A)	17 hours 32 minutes	0.043
Expectant group (group B)	12 hours 45 minutes	

Of 64 deliveries in induction group, 58 (90.63%) babies were given mother side, and 6 (9.38%) were admitted to NICU. In expectant group, 49 (76.56%) babies were given mother side, and 15 (23.44%) babies were admitted to NICU. The pvalue is statistically significant for NICU admission (p value 0.032) . There was no statistical significance in APGAR score at 1st minute with APGAR at 5th minute between two groups.

Table 2: Comparison of Mother side / NICU admissions of infants in both groups:

Mother side / NICU	Induction group(N=64) (Group A)	Expectant group(N=64) (Group B)
Mother side	58 (90.63%)	49 (76.56%)
NICU	6 (9.38%)	15 (23.44%)
P value	0.032	

Among the 6 NICU admissions in induction group, 1 newborn was admitted to NICU with grade 3 MSL, and poor APGAR 3/5, and was in NICU for 5 days. 2 newborns were admitted to NICU with RDS, and were in NICU for 2 days. 3 newborns were admitted to NICU with TTN, and were in NICU for 1 day, and were shifted to the mother side.

Among the 15 NICU admissions in expectant group, 2 babies were intubated and had NICU stay for 5 days. 6 babies were admitted with RDS, among which 3 babies had NICU stay for 3 days, 2 babies had NICU stay for 2 days and 1 baby had NICU stay for 1 day. 7 babies were admitted with TTN among which 3 were shifted to mother side after 1 day, 2 remained in NICU for 2 days, and another 2 newborns for 3 days. The p-value is not statistically significant for period of stay (p value: 0.26)

DISCUSSION:

This is a prospective study involving 128 participants which were enrolled based on inclusion and exclusion criteria and who were booked at PESIMSR. In this demographic description of study population, the benefits of labor induction are weighed against the potential maternal and fetal risks associated with continuing pregnancy till 40 weeks 6 days of gestation in term nulliparous women.

There is an increased risk of cesarean delivery among nulliparous women with an unfavorable cervix by induction of labor, as stated in many studies 6-8. The results of these studies cannot be universally applicable because of inappropriate comparison between nulliparous women undergoing elective induction of labor with women having the spontaneous onset of labor 9-11. One reason many providers are opposed to elective induction of labor is attributed to the notion of increased rates of cesarean deliveries, and thus an increase in maternal morbidity. However, in present study the opposite was found. In present study, no difference in the proportion of cesarean delivery between the induction of labour and expectant management groups was found. The p-value of present study comparing normal delivery with cesarean section is 0.074.

In present study, showed that the need for NICU admission is more in the expectant group compared to the induction group. The p-value is statistically significant for NICU admission (p value 0.032). William A. Grobmann et al 12 , the primary perinatal outcome occurred in 4.3% of the neonates in the induction group and in 5.4% in 48 the expectant-management group with P = 0.049 which is statistically significant. The results of present study were similar with this study.

REFERENCES :

1) E. Norwitz, J. Robison, and J Repke, "Labor and delivery," in S.G. Gabbe, J.R. Niebyl, J.L. Simpson, eds. Obstetrics: normal and problem pregnancies, 4th

ed., (New York: Churchill Livinsstone, 2002) pp. 353-94.
2) Olesen AW, Westergaard JG, Olsen J: Perinatal and maternal complications related to postterm delivery: a national register-based study, 1978-1993. Am J ObstetGynecol 2003, 189(1):222-227.
3) Norwitz ER, Snegovskikh VV, Caughey AB: Prolonged pregnancy: when should we intervene? ClinObstetGynecol 2007, 50(2):547-557.
4) Rosen MG, Dickinson JC: Management of post-term pregnancy. N Engl J Med 1992, 326(24):1628-1629.
5) Sanchez-Ramos L, Olivier F, Delke I, Kaunitz AM: Labor induction versus expectant management for postterm pregnancies: a systematic review with metaanalysis. ObstetGynecol 2003, 101(6):1312-1318.
6) Johnson DP, Davis NR, Brown AJ. Risk of cesarean delivery after induction at term in nulliparous women with an unfavorable cervix. Am J Obstet Gynecol 2003 Jun;188(6): 63 1565-1572.
7) Vahratian A, Zhang J, Troendle JF, Sciscione AC, Hoffman MK. Labor progression and risk of cesarean delivery in electively induced nulliparas. Obstet Gynecol 2005 Apr;105(4):698-704.
8) Vrouenraets FPJM, Roumen FJME, Dehing CJG, van den Akker ES, Aarts MJ, Scheve EJ. Bishop score and risk of cesarean delivery after induction of labor in nulliparous women. Obstet Gynecol 2005 Apr;105(4):690-697.
9) Dublin S, Lydon-Rochelle M, Kaplan RC, Watts DH, Critchlow CW. Maternal and neonatal outcomes after induction of labor without an identified indication. Am J Obstet Gynecol 2000 Oct;183(4):986-994.
10) Seyb ST, Berka RJ, Socol ML, Dooley SL. Risk of cesarean delivery with elective induction of labor at term in nulliparous women. Obstet Gynecol 1999 Oct;94(4):600-607.
11) Mahomed K, Pungsornruk K, Gibbons K. Induction of labour for postdates in nulliparous women with uncomplicated pregnancy—is the caesarean section rate really lower?J Obstet Gynaecol 2016 Oct;36(7):916-920. DOI:10.1080/01443615.2016.1174824.
12) A study by William A. Grobman et al at 41 hospitals – 2018: A multicentric randomized control trail "Labor Induction versus Expectant Management in Low-Risk Nulliparous Women".