

## Prevalence and Outcome of Induction of Labor in a Tertiary Care Center of Kathmandu, Nepal

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### ABSTRACT

**Aims:** To study the prevalence of induction of labor and obstetric and neonatal outcome among delivery cases in the maternity unit of a tertiary care center.

**Methods:** This is a prospective cross-sectional study conducted on pregnant ladies presenting to maternity unit of Shree Birendra Hospital, Chhauni over a period of six months from March to August 2017. All pregnant ladies in labor during the study period were enrolled. Induction of labor, mode of delivery, perinatal outcome (gestational age at delivery, birth weight), and maternal complications if any were recorded.

**Results:** Among 497 deliveries in the study period, induction of labor was performed in 117 (23.5%) cases with post-date pregnancy being the most common indication. Induction was successful with vaginal deliveries in 82(70.1%) cases, while in the rest, IOL failed. Among the induced cases, 17 (14.5%) neonates had poor APGAR at 5 minutes and there was significant association of IOL with low APGAR. There was normal post-natal recovery in 108 (92.3%) induced cases while 9 (7.7%) cases developed some maternal complications. IOL has no significant association with maternal and neonatal complications or perineal injury ( $p>0.05$ ).

**Conclusions:** The prevalence of induction in this center is slightly higher than other centers. The IOL has significant association with low APGAR at 5 minutes but no significant association with the neonatal and maternal complications.

**Keywords:** fetal distress, induction, obstetric, misoprostol

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### INTRODUCTION

Induction of labor (IOL) is a commonly performed obstetric procedure. IOL is increasing due to elective induction.<sup>1,2</sup> Rate of induction and outcome varies among studies. Prevalence of IOL is 42.9% in nulliparous and 31.8% in multiparous in United States.<sup>2</sup> Rate of IOL in Asia and Africa is 12.1% and 4.4% of deliveries respectively.<sup>3</sup> In Nepal, the rate of IOL varies between 5-10% of all delivery cases.<sup>4,5</sup> The incidence of perinatal deaths, meconium aspiration syndrome and cesarean section is less with induced labor.<sup>6,7</sup> In our context, misoprostol is commonly used inducing agent with effective cervical ripening and good outcome.<sup>8</sup>

This study was proposed to evaluate prevalence of induction of labor and obstetric and neonatal outcome in Shree Birendra Hospital, Chhauni; a tertiary level referral center of Nepal army. We conducted this study as maternity service was established only few years back in this center.

### METHODS

This is a prospective cross-sectional study conducted for all induced labor at maternity unit of Shree Birendra Military Hospital Kathmandu over a period of six months from March to August 2017 with ethical approval. Demographic variables, obstetric events and perinatal outcomes noted. Inducing agent was

### CORRESPONDENCE

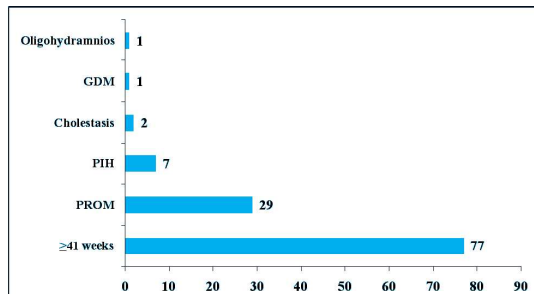
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Misoprostol 25µg kept vaginally 6 hourly maximum 4 dosage followed by augmentation by Oxytocin when required. Gestational age of ≥41 weeks, premature rupture of membrane (PROM) for 6 hours and other obstetric indications were included. Intermittent cardiotocographic monitoring was done. Data were entered in SPSS version 22 and analyzed with Chi-square test taking p-value <0.05.

**RESULTS**

Out of 497 deliveries with seven twins during the study period, 117 inductions were done with prevalence of 23.5% excluding two pregnancies induced due to congenital anomaly. Post-date pregnancy ≥41 weeks were 77(64.7%) as the commonest indication for induction followed by PROM in 29 (24.9%) and rest by other indications like pregnancy induced hypertension (PIH), cholestasis, gestational diabetes mellitus (GDM), oligohydramnios (Figure 1).



**Figure-1: Frequency distribution of indications induction of labor**

Majority (70%) had successful induction of labor with p=0.034 and out of them 94% required maximum of two dosage only [Table-1].

**Table-1: Result of induction of labor by Misoprostol**

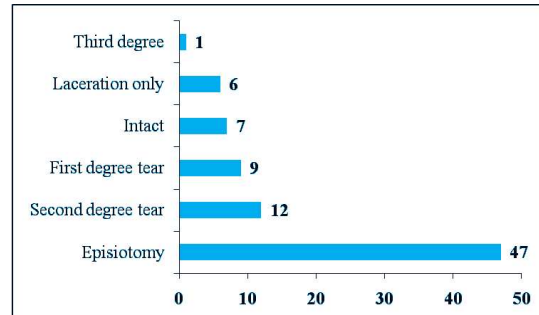
Number of dosage	Success	Failure	Total	p-value
1	42	10	52	0.034
2	25	16	41	
3	7	1	8	
4	8	8	16	
Total	82	35	117	

Out of 82 vaginal deliveries, 75 (91.5%) had some form of injury to birth canal. Episiotomy was the commonest (47; 57.3%) one followed by second degree perineal tear 12 (14.6%) [Figure 2].

Among the induced cases, 108 (92.3%) had normal postnatal recovery while 9 (7.7%) cases developed some maternal complications like post-partum

hemorrhage (n=4), surgical site infection (n=3), and retained placenta and urinary tract infection one each. Total 17 (14.5%) neonates had low Apgar score <7/10 at 5 minutes (p=0.014) and neonatal intensive care unit (NICU) admission was 32 (27.4%) (p=0.596). The major cause behind the admission was neonatal sepsis and respiratory distress [Table-3].

**Figure-2: Birth canal injury in vaginal deliveries (n=82)**



**Table-3: Neonatal complications among induced cases (n=32)**

Neonatal Complications	N (%)
Neonatal Sepsis	11 (9.4%)
Respiratory Distress	10 (8.5%)
Neonatal Jaundice	8 (6.8%)
Meconium Aspiration	1 (0.9%)
Perinatal/ Birth asphyxia	1 (0.9%)
Observation	1 (0.9%)

Gravida, parity, period of gestation, maternal complication and neonatal complication have no significant association with outcome of induction.

**DISCUSSION**

Induction of labor (IOL) is an essential part of the labor care. In a well-selected group, it is safe and beneficial, and benefits outweigh the risk of continuing the pregnancy.<sup>1,2</sup> Rate of induction and outcome varies from study to study. Prevalence of IOL is 42.9% in nulliparous and 31.8% in multiparous in United States. Vaginal delivery following elective IOL at term in multiparous was highly successful (97%) than in nulliparous (76.2%).<sup>2</sup> Rate of IOL in Asia and Africa is 12.1% and 4.4% of deliveries respectively.<sup>3</sup> In Nepal, one study conducted at Paropakar Maternity and Women’s Hospital showed IOL rate of 7.2% with normal delivery in 64.9%, caesarean section in 33.2%, and vacuum delivery in 1.9%.<sup>5</sup> Another study showed

induction rate of 9.72% with 67.7% successful vaginal deliveries and 32.3% emergency cesarean section deliveries.<sup>4</sup> IOL of 23.8% with success rate of 70.1% from the current study appears less than western data but more than other local studies.

Apgar score less than 7 at 5 minutes, low birth weight, neonatal intensive care units (NICU) admission, fresh stillbirth, caesarean section are common problems associated with IOL.<sup>3</sup> Similarly, present study also showed remarkable number of induced cases had low Apgar (17;14.5%) in contrast to a study that showed 0.76% only.<sup>9</sup> As neonatal complications, NICU admission was observed in 27.4% cases. A review of IOL compared with expectant management showed lesser perinatal deaths, meconium aspiration syndrome and cesarean section (CS) although no difference in NICU admission rate.<sup>6</sup> Likewise, another study showed that in elective IOL in 37-41 weeks' period, there were fewer perinatal mortality, no altered spontaneous vertex delivery rates, and increase in NICU admission.<sup>10</sup>

Misoprostol is commonly used to induce labor in developing world and the commonest indication for IOL is postdate pregnancy.<sup>11</sup> Misoprostol

results in more effective cervical ripening and IOL than oxytocin but it is associated with uterine hyperstimulation with fetal heart rate changes and increase in meconium stained liquor.<sup>12</sup> Although oral or vaginal route is equally effective for IOL in term women with unripe cervix less spontaneous rupture of membrane, less meconium stained liquor and less neonatal care unit admissions with oral misoprostol outweighs advantages over vaginal misoprostol.<sup>13</sup> But at this center, all cases were induced with vaginal misoprostol other than in PROM cases where sublingual route was used. Misoprostol is the agent of choice in our set up due to its low cost and user friendly.

## CONCLUSIONS

The prevalence of induction of labor is quite high whereas the rates of maternal and neonatal complications are within acceptable limit at this center. The IOL has significant association with low Apgar at 5 minutes while no significant difference with the neonatal and maternal complications.

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