Induction of Labour in Mid-Western Regional Hospital in Nepal: Practice and Outcomes

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Received: *5-Aug-2017;* **Accepted:** *30-Oct-2017*

Aims: Induction of labour has been a common intervention in modern obstetrics. This study is aimed to determine the distribution of practice and outcomes related to induction of labour in Mid-Western Regional Hospital in Nepal.

Methods: This is a retrospective cross-sectional study conducted at Mid-Western Regional Hospital in Surkhet, Nepal. Secondary data were collected from patients' records of the hospital from 16 July 2016 to 15 July 2017. All women who underwent induction of labour with oral misoprostol were included in this study. For induction of labour, maximum five doses of 50 micrograms oral misoprostol were administered in every four hours. Descriptive summary statistics were calculated.

Results: Out of total 3,694 pregnant women who delivered in MWRH, 10.5% (n = 387) were induced by oral misoprostol. Majority of labour induced women were in the age group of 20 – 24 years (52.9%), 37 – 42 weeks of gestation (69.5%), and multi-gravida (49.9%). Majority (77.0%) who underwent induction of labour had vaginal delivery. Among total induction of labour, 88.9% had healthy babies. Majority of new borns had APGAR score of six or more in both one minute (87.9%) and five minutes (93.6%). More than half of the new borns (54.5%) had a birth weight of 3000 – 3500 grams. Most of the induced cases (97.4%) were free of complications. Only 1.3% of cases had post-partum haemorrhage.

Conclusions: Induction of labour using oral misoprostol is a common practice in Mid-Western Regional hospital in Nepal and majority (77.0%) who underwent induction of labour had vaginal delivery.

Keywords: Induction of labour (IOL); misoprostol; post-date pregnancy.

DOI: 10.3126/njog.v12i2.19961

INTRODUCTION

Induction of labour is an artificial stimulation of contraction before spontaneous onset of labour, with or without ruptured membranes.[1] During late pregnancy, induction of labour is carried out to prevent complications when mother and unborn child are at risk. The main reasons for induction of labour are post-term pregnancy, pre-labour rupture of membranes (PROM), medical termination of pregnancy, and high blood pressure.[2] There are various methods for induction of labour such as natural and non-invasive methods, mechanical methods (Foley's catheter) and pharmaceutical agents (prostaglandins). Misoprostol (prostaglandin E_1), and dinoprostone (PGE_2) are common pharmaceutical agent for induction of labour.[3,4] Misoprostol has been used in either oral or vaginal route and it is found to be cheap and safe. Oral misoprostol is more effective for induction of labour and achieving vaginal delivery.[2] The aim of this study was to determine the practice and outcome of induction of labour in Mid-Western Regional Hospital (MWRH) in Nepal.

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METHODS

Retrospective cross-sectional study was conducted using secondary data source at Mid-Western Regional Hospital in Surkhet, Nepal. Data were collected from patients' records files of the hospital dating from 16 July 2016 to 15 July 2017. All women who underwent induction of labour were included in this study. For induction of labour, maximum five doses of 50 micrograms oral misoprostol were administered in every four hours. Data were analysed by help of Statistical Package for Social Science (SPSS) version 21.0. Induction of labour, indications of labour induction, mode of delivery, the maternal and foetal outcome was recorded along with demographic data such as age, ethnicity, and place of residence (district), gravida, antenatal care and gestational age. Descriptive summary statistics such as frequency and percentages were calculated to obtain the distribution of the variables under study. Ethical approval was

obtained from the Institution Review Committee of MWRH, Surkhet, Nepal.

RESULTS

Out of total 3,694 pregnant women who delivered in MWRH, 10.5% (n = 387) were induced by oral misoprostol. However, 84.7% of total delivered cases did not need labour induction, whereas, the data regarding induction of labour among remaining 4.8% of the total cases were missing (Table 1).

Table 1. Distribution of induction of labour among total deliveries (n=3694).

Characteristics	n	%
Induction of labour		
Yes	387	10.5
No	3127	84.7
Missing	180	4.8

It was found that among total induced labour, 3.4% (13) were of Rh-negative blood type, whereas remaining 96.6% (372) were of Rh-positive blood type. The major reasons for induction of labour were post-dated pregnancy (75.6%) and intra-uterine foetal demise (17.6%), followed by premature rupture of membrane (4.1%), pregnancy induced hypertension (1.3%), and anencephaly (1.3%) (Table 2).

Table 2. Distribution of indication for labour induction among total induction of labour.

Reasons for induction of labour	%	n (Total = 387)
Post-dated pregnancy	75.6	293
IUFD	17.6	68
Premature rupture of membrane	4.1	16
Pregnancy-induced hypertension	1.3	5
Anencephaly	1.3	5

Table 3 depicts the distribution of demographic characteristics among total pregnant women who underwent induction of labour. It shows that majority of pregnant women who underwent induction of labour (52.4%) were between 20 and 24 years. However, only 0.8% of total induced women were of more than 35 years or more. Additionally, 69.4% of the total women were found to be between the gestational age of 37 and 42 weeks which was the most followed by 26.4% in 42 weeks. But, only 2.1% of the total women were in the gestational age less than 34 weeks and 34 – 36 weeks respectively. Similarly, 47.8% and 49.9% of the total women were primigravidas and multigravida respectively. But, only 2.3% of the total women were grand-multigravida. Furthermore, in antenatal care, 58.3%, 32.4%, and 9.3% of the total women were booked, self, and referred, respectively. In line with the ethnicity, more than half (59.2%) were Brahmin/Chhetri followed by 22.2% Janajati and 18.6% minority/Dalit. Likewise, the majority (82.9%) of the women were from Surkhet district.

Table 3. Distribution of demographic characteristics among total labor induced women.

Characteristics	*N*	%
Age (completed years)		
≤19	73	18.9
20 – 24	203	52.4
25 – 29	86	22.2
30 – 34	22	5.7
35≤	3	0.8
Gestational age		
<34 weeks	8	2.1
34 – 36 weeks	8	2.1
37 – 42 weeks	269	69.4
42 weeks	102	26.4
Gravida		
Primi	185	47.8
Multi (2 – 5)	193	49.9
Grand-multi (6 or more)	9	2.3
Antenatal care *(n=386)*		
Booked	225	58.3
Self	125	32.4
Referred	36	9.3
Ethnicity		
Brahmin/Chhetri	229	59.2
Janajati	86	22.2
Minority/Dalit	72	18.6
Place of residence (District)		
Surkhet	321	82.9
Dailekh	41	10.6
Others	25	6.5

Table 4 represents the distribution of mode of delivery among total induced women. It was found that majority (77%) of the women had vaginal delivery whereas remaining 23% had caesarean section delivery.

Table 4. Distribution of mode of delivery among total labour induced women.

Characteristics	n	%
Mode of delivery		
Vaginal delivery	298	77.0
Caesarean section	89	23.0

Table 5 depicts the distribution of foetal outcome among total induced labour. Among total induced labour, nearly nine out of ten (88.8%) babies had normal health status and were given to mother after delivery; 6.5% babies had morbid/hospital admission and remaining 4.7% babies had foetal death/IUFD/

stillbirth. Apart from this, 87.9% and 93.7% of the babies had APGAR score of six or more in one minute and five minutes respectively. Similarly, more than half of the babies (54.6%) had birth weight between 3000 grams and 3500 grams followed by 26.6% had a birth weight between 2500 grams and 2900 grams. Only 6.7% of total babies had low birth weight status.

Table 5. Distribution of foetal outcome among total induced labour.

Characteristics	n	%
Foetal health		
Healthy baby given to mother	344	88.8
Morbid/Hospital admission	25	6.5
Foetal death/IUFD/Stillbirth	18	4.7
APGAR score in one minute		
0	18	4.7
<6	29	7.4
≥6	340	87.9
APGAR score in five minutes		
0	18	4.7
<6	6	1.6
≥6	383	93.7
Birth weight		
<2500 grams	26	6.7
2500 – 2900 grams	103	26.6
3000 grams – 3500 grams	211	54.6
>3500 grams	47	12.1

Table 6 shows maternal complications among total induced labour. Most of the induced cases (97.4%) were free of complications. Only 2.6 % women had complications such as haemorrhage/PPH, shock, and wound infection and mastitis/breast infection. Among them, PPH (1.3%) was found to be the major complication.

Table 6. Distribution of maternal complications among total induced labour.

Characteristics	n	%
Maternal complications		
Haemorrhage/PPH	5	1.3
Shock	1	0.3
Wound infection	2	0.5
Others (Mastitis/Breast infection)	2	0.5
No complications	377	97.4

DISCUSSION

The practice of induction of labour has been increasing steadily since the 1980s in both developed and developing countries. In many clinical situations, induction of labour in the third trimester of pregnancy can be considered beneficial. In America, approximately 1 in 4 pregnant women are induced.[5] However; this study showed only 10.5% was induced in total birth in Mid-Western regional hospital in Nepal.

Misoprostol is inexpensive, can be easily stored at room temperature and available in more than 80 countries. Misoprostol stimulates uterine contraction and cervical ripening. WHO recommends misoprostol for its use into four reproductive health guidelines focused on induction of labour, prevention and treatment of postpartum haemorrhage, and management of spontaneous and induced abortion.[6] Misoprostol is absorbed rapidly by both oral and vaginal route and has few systemic side-effects. Therefore, misoprostol may be the only affordable prostaglandin preparation for cervical ripening and labour induction in many poorly resourced countries like Nepal.

A comparative study showed, oral misoprostol resulted in a longer induction to vaginal delivery interval but increased maternal satisfaction and less hyperstimulation compared with intravenous oxytocin in women at term with premature rupture of membranes.[7] Misoprostol appears to be more effective than conventional methods of cervical ripening and labour induction. A clinical trial shows that oral misoprostol reduces the need of oxytocin and shortens the time between induction and delivery when compared with placebo.[2] Similarly, another study has shown misoprostol is not associated with an increased risk of tachysystole, hypertonus and hyperstimulation syndrome when compared with oxytocin.[8] A comparative study has shown that the administration of a lower dose of misoprostol via vaginal route is more successful in a shorter time interval of induction of labour than oral administration. However, vaginal route is associated with more abnormal FHR patterns and instances of uterine hyperstimulation.[9] Similarly, another study has shown that misoprostol is an effective agent for labour induction when administered by both route orally or vaginally but occurrence of abnormalities on foetal heart rate was more frequently observed in vaginal application.[10] Evidence showed oral misoprostol administration is successful in minimising the risk of uterine hyperstimulation.[11] However, another randomised control trial study has shown no evidence that oral misoprostol is superior to vaginal dinoprostone for induction of labour.[12]

Induction of labour is recommended for post-date pregnancy, PROM at term and PROM near term with

pulmonary maturity.[2,13] Oral misoprostol is a superior agent for cervical priming and labour induction in patients with PROM at term.[14] In this study, reasons of induction of labour were post-dated pregnancy, IUFD/anencephaly, premature rupture of membrane, pregnancy-induced hypertension. This study has shown that induction of labour is common from 37 to 42 gestational weeks of pregnancy. A randomised comparative study conducted among 100 women with 37 or more gestational weeks pregnancy by Maskey et al[15] showed oral misoprostol is safe and effective as intravenous oxytocin in inducing labour in women with PROM at term.

Most of the induced cases had vaginal delivery (77%) and only 33% induced women have undergone CS in our study. A comparative study showed more women on oral misoprostol (87.6%) received vaginal delivery as compared to women on vaginal misoprostol (77.9%).[16] Oral misoprostol may be associated with higher rates of vaginal delivery than vaginal misoprostol underwent caesarean section than women induced by oral misoprostol, but the mode of delivery is statistically not different.[10,16-19] Oral misoprostol is effective for achieving vaginal delivery.[2]

The maternal and foetal outcome were appeared to be satisfactory in this study. Almost women (97.4%) who underwent induction were free of any complications. About 89% babies were born healthy. Most of the newborn babies had good APGAR score in one minute (87.9%) and five minutes (93.6%). Only 6.7% had low birth weight. Oral misoprostol is equally efficient and safe as another regimen (established a protocol (physician-chosen combinations of intracervical or vaginal prostaglandins every 4–6 hours, artificial rupture of membranes, and oxytocin infusion).[20] There is no difference in maternal and foetal outcome in between oral and vaginal misoprostol.[10,14,16,1-20]

This study has shown that 82.9% induced women were from Surkhet district and 59.2% women were from Brahmin/Chhetri ethnicity. This could be because the majority ethnic population in the Surkhet district are the Brahmin/Chettri. Similarly, 52.4% induced women were of the age group of 25 – 29 years. Majority of women who had booked antenatal care (58.3%) and multipara (52.1%) had undergone induction of labour by oral misoprostol in this study.

CONCLUSIONS

Oral misoprostol has been found to be a popular agent for induction of labour in Mid-Western Regional hospital. Oral misoprostol was effective, efficient and safe for induction of labour. It is a suitable and practicable method for induction of labour in the hospital where there is a shortage of resources.

ACKNOWLEDGEMENT

Our sincere thanks go to Prof. Dr Ganesh Dangal for providing us with valuable advice and guidance on concept, design, conduction and critical review of the manuscript of the study. Similarly, we would like to express our gratitude towards Prof. Dr Gehanath Baral for reviewing this manuscript and giving us a valuable support. We would like to express thanks to the medical superintendent and all staff of Mid-Western Regional Hospital for their help in our study. We would also like to thank Astha Dhakal and Bishal Dhakal for their contribution.

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