



RESEARCH ARTICLE

PROFILE OF INDUCED LABOUR IN UNCOMPLICATED PREGNANCIES WITH UNFAVOURABLE MODIFIED'S BISHOP SCORE IN A TERTIARY CARE CENTRE

Shelly Chaudhary

Manuscript Info

Manuscript History

Received: 25 January 2024

Final Accepted: 27 February 2024

Published: March 2024

Abstract

Background: Induction of Labor is a non-spontaneous initiation of uterine contractions before onset of spontaneous labour that results in progressive dilatation with effacement of cervix and further descent of the presenting part of fetus, leading to safe vaginal delivery of the baby. ACOG has an extensive list of recommendations on delivery timing for various complicated and uncomplicated pregnancies. Pharmacological methods are most commonly deployed for induction in patients with poor bishop' s score. The aim of this study is to determine maternal and perinatal outcome in induced labour in medically uncomplicated pregnancies.

Methods: This is a hospital based retrospective observational study conducted for a duration of 11 months on 422 patients admitted in our labour room with unfavourable modified bishops score given induction of labour for various reasons after ruling out any contraindication for vaginal delivery.

Results: In our study of 422 participants, majorities was term pregnancies (93.36%) and were induced by dinoprostone gel. Most common indication for IOL was postdated pregnancy (36.49%) and 67.3% patients underwent vaginal delivery. 27.7% of all vaginal deliveries required additional doses of dinoprostone. Most common indication for emergency caesarian section was FIOI (63.77%). All neonates were born alive and 32.46% neonates got admitted in NICU, most common indication being neonatal jaundice. 42.42% cases developed complication of induction most common being MSL(17.54%).

Conclusion: Induction of labor is beneficial and safe even in uncomplicated pregnancies. Although there is increased incidence of caesarian section, induction should be performed once risk of continuing pregnancy outweighs risk of termination.

Copy Right, IJAR, 2024,. All rights reserved.

Introduction:-

Labor induction is a clinical intervention that has the potential to provide benefits to the mother and newborn when continuation of pregnancy poses a danger to the outcome of pregnancy.^[1] Induction of Labor is a non-spontaneous initiation of uterine contractions before onset of spontaneous labour that results in progressive dilatation with effacement of cervix and further descent of the presenting part of fetus, leading to safe vaginal delivery of the baby,

after 28 weeks of gestation. It is initiating the process of labor by artificial means.^[2] IOL is indicated when it is thought that the outcomes for the fetus, the mother, or both are better than with expectant management (SPOL).^[3]

The uterus includes both the corpus and the cervix, with the corpus being composed of smooth muscle and the cervix predominantly collagen. The cervix undergoes dynamic changes during pregnancy and labor, prostaglandin induced activation of collagenase leading to its shortening, thinning, and dilatation. Mechanical and pharmacological methods of labor induction can be used to make these physiological cervical changes occur.^[4]

The American College of Obstetricians and Gynecologists (ACOG) has an extensive list of recommendations on delivery timing, with some of the more common clinical scenarios listed below

1. Oligohydramnios with the timing at 36 0/7 to 37 6/7 weeks of gestation
2. Fetal intrauterine growth restriction, with no abnormal Doppler, with the timing at 38 0/7 to 39 6/7 weeks of gestation
3. Fetal intrauterine growth restriction, with absent end-diastolic flow, with the timing at 34 0/7 weeks of gestation
4. Fetal intrauterine growth restriction, with reversed end-diastolic flow, with the timing at 32 0/7 weeks of gestation
5. Chronic hypertension, not on medications, with the timing at 38 0/7 to 39 6/7 weeks of gestation.
6. Gestational hypertension with the timing at 37 0/7 weeks of gestation or at the time of diagnosis if diagnosed later
7. Chronic hypertension, not on medications, with the timing at 38 0/7 to 39 6/7 weeks of gestation
8. Gestational hypertension with the timing at 37 0/7 weeks of gestation or at the time of diagnosis if diagnosed later
9. Preeclampsia without severe features with the timing at 37 0/7 weeks of gestation or at the time of diagnosis if diagnosed later
10. Preeclampsia with severe features with the timing at 34 0/7 weeks of gestation or at the time of diagnosis if diagnosed later
11. Pregestational diabetes well-controlled, with the timing at 39 0/7 to 39 6/7 weeks of gestation
12. Gestational diabetes (GDM), diet, or exercise controlled, with the timing at 39 0/7 to 40 6/7 weeks of gestation
13. Preterm pre-labor rupture of membranes (PPROM) with the timing at less than 37 weeks of gestation or at the time of diagnosis if diagnosed later.
14. Late-term with the timing at 41 0/7 to 41 6/7 weeks of gestation
15. Abruptio placentae
16. Chorioamnionitis
17. Intrauterine fetal demise (IUFD)^[5]

Contraindications to IOL include but are not limited to the following:

1. Vasa previa or placenta previa
2. Transverse fetal presentation
3. Umbilical cord prolapse
4. History of a prior classical cesarean section
5. Active herpes infection
6. A previous myomectomy breaching the endometrial cavity^[5]

Bishops scoring was introduced by Bishops for cervical ripening and favorability for the vaginal delivery. Total bishop's scoring is 13 and those patients with a score of less than 7 is termed as unfavorable score and those patients with more than or equal to 8 is termed as favorable score. Cervical ripening agents are useful when the Bishop score is unfavorable.^[14]

Cervical feature	Score: 0	1	2	3
Cervical dilatation	< 1cm	1-2 cm	2-4 cm	> 4 cm
Cervical length	4 cm	2-4 cm	1- 2 cm	< 1 cm
Station of presenting part	-3 cm	-2 cm	-1/0 cm	+1/+2 cm
Consistency of cervix	Firm	Average	Soft	
Position of cervix	posterior	Mid position/ anterior		

Ian Donald's practical obstetric problems, 7th edition, chapter 26, page 498, table 26.1.

Two primary methods of induction of labor are mechanical and pharmacological. **Mechanical** cervical ripening can be done using a Foley catheter or double-balloon device (i.e., Cook catheter) placed into the endocervical

canal. **Pharmacological** methods include synthetic prostaglandins and synthetic oxytocin. Prostaglandins are used for cervical ripening. Misoprostol [prostaglandin E1 (PGE1)], and dinoprostone [prostaglandin E2 (PGE2)], are used in various doses and routes of administration. Prostaglandins should be used with caution in women with a history of a low transverse cesarean section due to concerns for uterine rupture while Misoprostol should be used with caution in multigravida due to fear of uterine rupture.^[5] For cervical ripening with misoprostol, there is a range of doses and routes of administration, such as orally, vaginally, or sublingually. Doses of misoprostol range from 25 micrograms (mcg) to 50 mcg.^[5] Dinoprostone is available as a vaginal insert and gel formulation. The gel formulation is available in 0.5 mg to be administered endocervically, and the insert is 10 mg. Further pharmacological methods include syntocinon, given intravenously in varying dosing regimens.^[5]

Pharmacological induction can cause uterine tachysystole, with more than 5 contractions in 10 minutes leading to fetal decelerations or fetal bradycardia. Further complications include APH, presence of meconium-stained amniotic fluid, umbilical cord prolapse, pain not relieved with regional anesthesia, perineal lacerations, PPH, chorioamnionitis, and postpartum endometritis.^[5]

Aims:-

To determine maternal and perinatal outcome in induced labour in medically uncomplicated pregnancies.

Inclusion Criteria

1. All pregnancies after 28 weeks.
2. Medical disorders- Mild hypertension and GDM controlled on diet.
3. Postdated and post-term pregnancy.
4. Prelabor rupture of membranes (PROM) and Preterm prelabor rupture of membranes (PPROM).
5. Rh negative pregnancy with ICT negative.

Exclusion Criteria

1. Less than 28 weeks gestational age.
2. Previous cesarean section/ Hysterotomy, Cephalopelvic disproportion (diagnosed before IOL).
3. FGR.
4. Intra uterine fetal death.
5. Severe anaemia, severe preeclampsia, eclampsia, GDM and diabetes mellitus on therapy.
6. Rhesus isoimmunisation.
7. Non reassuring non stress Test, Oligohydramnios.
8. Antepartum hemorrhage, Pelvic tumors, Herpes genitalis infections.
9. Obstetric cholestasis.
10. Malpositions.

Materials and Methods:-

This is a hospital based retrospective observational study which was conducted from 1 January 2023 to 30 November 2023 with duration of 11 months in J.K. Lone Hospital, GMC Kota. All the 422 patients admitted in our labor ward were selected for study excluding the exclusion criteria. The data was collected and maternal and fetal outcome was observed. Maternal outcomes includes mode of induction, gestational age at induction, mode of delivery, indications of induction, indication of emergency caesarian section, complications of induction while Fetal outcomes includes number of still births and prolonged NICU stay with their cause including MSL, poor APGAR and fetal distress.

In our labour ward, prior to induction basic requirements and contraindications for induction was assessed and the passage and passenger were assessed. Induction was preferably done in morning hours. Before doing induction, all the patients were asked to evacuate bladder and after induction they were asked to lie down on left lateral position for at least 30 minutes. Misoprostol was kept in posterior vaginal fornix soaked in distilled water and dinoprostone gel 0.5mg was kept in posterior fornix every 6-8 hourly until adequate uterine contractions were achieved, the maximum of 3 doses 6 hours apart were introduced. Dinoprostone gel was preferred over misoprost as it can be easily removed in case of uterine hyperstimulation. The induced patients were monitored in labor room where maternal and fetal monitoring with Non Stress Test (NST) and intermittent auscultation was provided. After the

cases entered active stage of labour, artificial rupture of membrane was done along with sweeping of membranes to augment labour.

Results:-

A total of 422 uncomplicated pregnancies were observed in our labour ward during the duration of study. Among these 422 patients, 418 were induced with dinoprostone gel and 4 patients were induced with tablet misoprostol kept vaginally. Out of 422 patients, 62.08% were primigravida whereas 37.92% were multigravida, highest gravida being observed as 4.

MODE OF INDUCTION	DINOPROSTONE GEL	MISOPROSTOL	MECHANICAL INDUCTION
Primigravida	260	2	0
Multigravida	158	2	0
Total	418	4	0

Period of gestation:

40.28% patients were of gestational age between 37 to 39⁺⁶ weeks of gestation, 53.08% patients were of gestational age between 40 to 41⁺⁶ weeks of gestation, 6.16% patients were in between 28 to 36⁺⁶ weeks of gestation and 0.47% patients were more than or equal to 42 weeks of gestation. The minimum weeks of gestation observed were 28 weeks 1 day and maximum weeks of gestation were 42 weeks 2 days.

Gestational age	Primi gravida	Multi gravida	Total
28 weeks – 36 ⁺⁶ weeks	11	15	26
37 weeks – 39 ⁺⁶ weeks	98	72	170
40 weeks – 41 ⁺⁶ weeks	151	73	224
42 weeks and more	2	0	2
Total	262	160	422

Indications for induction:

Out of 422 patients, 36.49% patients were induced for postdated pregnancy, 27.01% were induced for premature rupture of membranes (PROM), 14.93% patients were induced for due date, 8.77% patients were induced for mild HTN, 6.16% patients for PPRM, 1.90% were induced for decreased fetal movement, 0.95% were induced for hypothyroidism, 0.71% patients were induced for Rh-neg with negative ICT, 0.24% were induced for GDM controlled on diet and 2.84% patients were induced electively.

Indication for induction	Primi gravida	Multi gravida	Total
PROM			114
Postdated pregnancy	104		154
Mild HTN			37
Due date			63
Hypothyroidism			4
Fetal alarm signal			8
PPROM			26
Rh-neg with ICT negative	1	2	3
GDM controlled on diet	1	0	1
Elective			12

Successful IOL:

Out of 422 patients induced, 284 patients (67.30%) delivered vaginally. Of all 418 patients induced with dinoprostone gel, 203 patients were delivered by single dose and 78 patients required additional doses of gel. Of all 4 patients induced with misoprostol, 3 were delivered vaginally.

Vaginal delivery	Primi gravida	Multi gravida	Total
Single dose PGE ₂	106	97	203
Multiple dose PGE ₂	39	39	78
Misoprostol	1	2	3
Mechanical induction	0	0	0

Total	146	138	284
-------	-----	-----	-----

Indications for Em-LSCS:

In this study a total of 422 patients were selected out of which 284 cases (67.30%) were delivered vaginally and 138 cases (32.70%) were delivered by emergency cesarean section. Most common indication for cesarean section was for failed induction, which accounted for 63.77% of all emergency C-sections. The next common indications were fetal distress which accounts for 26.09% and for NPOL which accounts for 7.25%. Other indications include APH and arrest of labour.

Indication for Em-caesarian section	Primi gravida	Multi gravida	Total
FIOL	74	14	88
Fetal distress	28	8	36
Active phase arrest	1	0	1
Secondary arrest of labour	3	0	3
APH	0	0	0
NPOL	10	0	10
TOTAL	116	22	138

Fetal outcome:

Fetal outcome in terms of live and still birth is being observed which now accounts in 422 patients. Out of these 422 induced patients, all 422(100%) babies born were alive and no stillbirths were noted during the process of labor. Out of 422 babies born alive, 285 (67.54%) of the babies was sent to mother-side or were discharged within the duration of mother's hospital stay (which was between 3 to 7 days) and 137 (32.46%) of the babies were admitted to NICU or pediatric ward after assessing the severity of distress in babies by a pediatrician on duty. Out of all babies admitted in ward, one expired while being treated in Neonatal Intensive Care Unit (NICU) because of sudden neonatal hypoglycemia. 25.36% of all live neonates were admitted in NICU for neonatal jaundice, and 4.50% of all live neonates were admitted for poor APGAR score after 15 minutes of delivery. 1.18% live neonates were admitted for LBW, and 0.71% live neonates were admitted each for LBW with poor APGAR and VLBW with poor APGAR.

Prolonged NICU stay	No of neonates
Neonatal sepsis	0
NNJ	107
LBW	5
LBW + Poor APGAR	3
VLBW + Poor APGAR	3
Poor APGAR	19
MAS	0
Sudden hypoglycemia	1

Complications of IOL:

Out of 422 patients, 42.42% cases had complications associated with IOL. 26 cases had iatrogenic premature neonates, 74 cases developed MSL, 39 cases had fetal distress, 20 cases had leukocytosis with TLC >20,000, 12 cases had PPH, 4 patients had Puerpural pyrexia, 3 had post-operative wound infection and 1 had suspected chorioamnionitis.

Complication of IOL	No of cases
Iatrogenic Prematurity	26
MSL	74
TLC >20,000	20
Puerpural pyrexia	4
PPH	12
Fetal distress	39
Post-operative wound infection	3
Suspected chorioamnionitis	1
APH	0
Cord prolapse	0

Rupture of uterus	0
Total	179

Discussion:-

Labor is induced when delivery is likely to benefit the health of the fetus or mother or both and risk factors for continuation of pregnancy outweigh risk factors associated with its termination. A general concept regarding induction is that, it is more associated with complications in comparison with spontaneous labor. This study comprises 422 medically uncomplicated pregnant females who had various indications for induction of labor and the maternal and fetal outcome was observed.

Although misoprostol is currently not approved for induction of labor in United States and United Kingdom, but its use for induction is approved in our country. Misoprostol was not used in women with more than 4 parities with a fear of uterine rupture. We have observed that dinoprostone gel was effective and safe in cervical ripening. Dinoprostone gel is generally preferred over misoprostol as it can be easily removed in case of uterine hyperstimulation if instilled into posterior fornix. Tablet misoprostol is considered as highly effective in inducing labor for low resource settings as it is readily available in low resource settings as a part of PPH management.

In the present study, the commonest agent for induction was dinoprostone gel which accounts 94.57% whereas misoprostol was used in 5.43% patients only.

Of all the patients induced, 93.36% pregnancies were term pregnancies between gestational age 37 to 41⁺⁶ weeks of gestation, 6.16% pregnancies were preterm with gestational age 28 to 36⁺⁶ weeks of gestation and 0.47% pregnancies were post term with gestational age more than or equal to 42 weeks.

The most common indications for induction in the present study was postdated pregnancy which accounts for 36.49% cases followed by premature rupture of membranes (PROM) which accounts 27.01% cases. A similar study by Yadav et al. stated similar results with indication of induction as post-dated pregnancy (54.07%) followed by PROM (13.33%)^[6]. Third most common indication for induction is due date which accounts for 14.93% cases followed by Mild HTN which accounts for 8.77% cases. Other indications of induction were preterm pre-labor rupture of membrane (PPROM), decreased fetal movement, elective induction, hypothyroidism, Rh negative pregnancy with ICT negative titres and GDM controlled on diet.

Out of 422 patients induced, 67.30% cases delivered vaginally while 32.70% had to undergo emergency C-Section for various indications. In a similar study by Yadav et al., 57.78% delivered vaginally and 39.26% delivered by C-Section^[6]. In another study by Sharma et al., 74.20% cases delivered vaginally whereas 25.8% underwent emergency C-Section^[7]. Of all induced patients, 66.59% delivered by prostaglandin gel and of all the vaginal deliveries conducted by incorporating dinoprostone gel 72.24% patients were delivered by single dose of dinoprostone gel and 27.76% patient required additional doses of gel. Of all patients induced with misoprostol, 75% were delivered vaginally.

Of all 138 cases which were delivered by emergency cesarean section, most common indication for cesarean section was for failed induction, which accounted for 63.77% of all emergency C-sections. Of all the patients who underwent emergency caesarian section for FIOL, 84.09% patients were primigravida. In a similar study by Begum et al., 90% undergoing emergency caesarian section for FIOL were primigravida.^[9] The next common indications were fetal distress which accounts for 26.09% and for NPOL which accounts for 7.25%. This is in contrast with another study conducted by Dagli et al., where most common indication of emergency Caesarian section was NPOL.^[8] In another study by Begum et al., most common indication of emergency caesarian section was fetal distress which accounts for 55% cases.^[9] Regarding the mode of delivery in our study, 67.3% had vaginal delivery. Out of these vaginal deliveries, there were no instrumental vaginal deliveries observed. Of all induced primigravida, 44.27% of cases were taken for caesarean section and 55.72% cases were delivered vaginally. Of all the multigravida induced in our study, 86.25% delivered vaginally and only 13.75% required emergency C-Section. In a similar study by Birla et al., 21.8% of all induced primigravida and 9.81% of all induced multigravida underwent emergency caesarian section.^[11]

It was further noticed that 27.76% of all cases that delivered vaginally via dinoprostone gel instillation required additional doses of dinoprostone gel; 26.90% of all primigravida that delivered vaginally required additional doses

of gel. In a similar study by Patidar et al., 23% cases required additional doses of dinoprostone gel.^[10] 28.47% of all multigravida that delivered vaginally required additional doses of dinoprostone gel.

Also, on comparing vaginal birth rates of dinoprostone gel, of all primigravida induced by dinoprostone gel, 40.77% were vaginally delivered by single dose of gel, 15% cases required additional doses of gel to undergo vaginal delivery and 44.23% cases had to undergo emergency C-Section for various indications. As compared to all multigravida induced by dinoprostone gel, 61.39% cases were delivered vaginally by single dose of dinoprostone gel, 24.68% required additional doses of gel to undergo vaginal delivery and 13.92% cases underwent emergency C-Section for various indications.

Of all the 422 induced patients, PPH was reported in 2.84% cases. This may be attributed to routine practice of AMTSL in our centre. In a similar study by Jamil et al., PPH was seen in 2.6% cases who were induced by prostaglandin^[12]. Of all cases, 17.54% cases developed MSL but none of the neonates developed symptoms of MAS. Maternal leukocytosis (TLC>20,000) was reported in 4.74% cases and puerperal pyrexia in 0.95% cases. Post-operative wound infection was seen in 0.71% cases. APH, Rupture of uterus and cord prolapse was not seen in any of these cases.

Out of these 422 induced patients, all 100% babies born were alive and no stillbirths were noted during the process of labor. Out of all babies born alive, 67.54% of the neonates was sent to mother-side or were discharged within the duration of mother's hospital stay and 32.46% of the babies were admitted to NICU or pediatric ward by pediatrician on duty. In a similar study by Soni et al., 26.2% NICU admissions were seen.^[13] 25.36% of all live neonates were admitted in NICU for neonatal jaundice. This is in contrast to similar study by Soni et al., where 19.6% cases developed neonatal jaundice.^[13] 4.50% of all live neonates were admitted for poor APGAR score persistent even after 15 minutes of delivery, 1.18% live neonates were admitted for LBW, and 0.71% live neonates were admitted each for LBW with poor APGAR and VLBW with poor APGAR each.

Conclon:-

Induction of labor is beneficial and safe in even in uncomplicated pregnancies. Though it is thought that induction has lot of hazards but its outcome is beneficial in selected patients where continuing pregnancy is more hazardous than its termination. Although, there is slight increase in rates of caesarean delivery still the fetal complications are comparable to other studies. So, induction is beneficial but more studies are needed to support our study findings.

Conflict of interest statement:

The authors attest that they have no conflicts of interest.

Funding:

None.

References:-

1. Norwitz E., J. Robison and J. Repke, "Labor and delivery in Gabbe SG, Niebyl JR, Simpson JL, eds. Obstetrics: normal and problem pregnancies. 4Th ed., New York: Churchill Livinsstone; 353-94, 2002.
2. S.I. Kayani, Z. Alfiveric, Induction of labour with previous caesarean delivery: where do we stand? Current Opinion Obstetrics and Gynecology, (2006); 18:636-41.
3. Marconi AM. Recent advances in the induction of labor. F1000Res. 2019;8 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6823899/>
4. Gill P, Lende MN, Van Hook JW. Induction of Labor. [Updated 2022 May 11]. In: StatPearls [Internet]. Treasure Island (FL): StatPearls Publishing; 2022 <https://www.ncbi.nlm.nih.gov/books/NBK459264/>
5. ACOG committee opinion no. 560: Medically indicated late-preterm and early-term deliveries. Obstet Gynecol. 2013 Apr;121(4):908-910. <https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/07/medically-indicated-late-preterm-and-early-term-deliveries>
6. Yadav SK, Yadav I, Pradhan T, Jyoti S, Yadav R. Induction of Labour among Pregnant Women in the Department of Obstetrics and Gynaecology in a Tertiary Care Centre. JNMA J Nepal Med Assoc. 2023 Sep 1;61(265):687-690. doi: 10.31729/jnma.8255. PMID: 38289805; PMCID: PMC10579742. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10579742/>

7. Sharma S, Dhakal I. Cesarean vs Vaginal Delivery : An Institutional Experience. JNMA J Nepal Med Assoc. 2018 Jan-Feb;56(209):535-539. PMID: 30058639; PMCID: PMC8997327. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8997327/>
8. Dagli S, Fonseca M. To Study the Maternal and Neonatal Outcome in Postdated Women Undergoing Induction of Labour Versus Spontaneous Labour. J Obstet Gynaecol India. 2021 Apr;71(2):131-135. doi: 10.1007/s13224-020-01395-5. Epub 2021 Jan 2. PMID: 34149214; PMCID: PMC8166986. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8166986/>
9. Ferdousi Begum, Nargis Sultana, Yasmin Ara Begum, Mosammat Rehana, Karishma Sultana, Sunny Barua, Nasrin Zannat Sumi (2022). Indication of Induction of Labor-A Hospital Based Study. Sch Int J Obstet Gynec, 5(11): 527-532. https://scholar.archive.org/work/5e4dgdvkujhtvofdfpc67u7l64/access/wayback/https://saudijournals.com/media/articles/SIJOG_511_527-532_c.pdf
10. Patidar BL, Saini M, Gupta V. Incidence of caesarean delivery after induction of labour in nulliparous women with unfavorable bishops score at tertiary care centre. Int J Reprod Contracept Obstet Gynecol 2022;11:3156-60. <https://www.ijrcog.org/index.php/ijrcog/article/view/12223>
11. Birla, Dr. Shrutee, Dr. Manisha Gupta, Dr. Pankaj Birla and Dr J. N. Sharma. "COMPARISON OF INCIDENCE , INDICATION AND COMPLICATION OF PRIMARY CESAREAN SECTION IN PRIMIGRAVIDA AND MULTIGRAVIDA." (2017).http://www.ijmse.com/uploads/1/4/0/3/14032141/ijmse_2016_volume_3_issue_3_page_311-317.pdf
12. Jamil S., Majeed T., Naureen R., Sheraz AM, Sikandar ZM.: Incidence of Postpartum Hemorrhage in Induced Versus Normal Labour. Pak J Med Health Sci, 2023; 17(8): 57-59.https://www.researchgate.net/profile/Mirza-Zeeshan-Sikandar/publication/377873428_Incidence_of_Postpartum_Hemorrhage_in_Induced_Versus_Normal_Labour/links/65bb9ae01bed776ae31cb16b/Incidence-of-Postpartum-Hemorrhage-in-Induced-Versus-Normal-Labour.pdf?_tp=eyJjb250ZXh0Ijp7ImZpcnN0UGFnZSI6InB1YmxpY2F0aW9uIiwicGFnZSI6InB1YmxpY2F0aW9uIn19
13. Soni, Kavita, Khetrabasi Subudhi, Bharati Misra, Brundaban Chandra Gouda, and Smita Chaudhary. "Maternal and perinatal outcome in induction of labour: A comparative study." Sch J Appl Med Sci 5, no. 1D (2017): 273-81.https://www.saspublishers.com/media/articles/SJAMS_51D273-281.pdf
14. Misra R. Ian Donald's Practical Obstetric Problem, 7 th Edition. BI Publications Pvt Ltd.; 2014.