Research Article

Mifepristone as cervical ripening agent for Labour induction in women with Previous one Caesarean Section

Acharya R[1], Chaudhari P[2], Choudhary A[3], Sharma A[4], Jain S[5]

[1]Dr Rajiv Acharya, Professor Department of Obstetrics and Gynaecology, [2]Dr Priyanka Chaudhari, Assistant Professor Department of Obstetrics and Gynaecology, [3]Dr Anjali Choudhary, Associate Professor Department of Obstetrics and Gynaecology. All are affiliated with Shri Guru Ram Rai Institute and Health Sciences Patel Nagar Dehradun Uttarakhsnd, [4]Dr Arti Sharma, Professor, Department of Obstetrics and Gynecology Teerthankaer Mahaveer Medical College and Research Centre Moradabad Utaar Pradesh, [5]Dr Shweta Jain, Senior Resident, Department of Obstetrics and Gynaecology Shri Guru Ram Rai Institute and Health Sciences Patel Nagar Dehradun, Uttarakhsnd, India.

Address for correspondence: Dr Priyanka Chaudhari, Email: dishitapriya07@gmail.com

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Abstract

Background and Objective: Induction of labour is a common obstetric intervention. Women with a prior caesarean delivery have an increased risk of uterine rupture particularly when labour is induced. In women with previous one caesarean section, it is unclear which method of cervical ripening and labour induction is preferable. With this background current study was done to evaluate the efficacy and safety of mifepristone in women undergoing induction of labour at term after previous caesarean section. **Material and Method:** A total of 50 women who had a previous caesarean delivery with a low transverse uterine incision at 37-42 wk of gestation, having clear clinical indication for induction of labour with unfavorable cervical condition (Bishop's score<5) were taken into the study. All women who meet the inclusion criteria received Tab Mifepristone 200 mg orally which was repeated after 24 hr. Reassessment of Bishop score was done after 48 hrs of first dose, and patient allowed to go into spontaneous labour. Labour was augmented with oxytocin infusion and/or ARM according to the progress of labour. **Results:** In our study mean pre induction Bishop's score was 2.34±0.84 and mean post induction Bishop's score was 8.24±1.65.In 35(70%) women labour was augmented with oxytocin and /or ARM, whereas 7(14%) women entered into spontaneous active labour and did not required any augmentation. In our study 42(84%) women delivered vaginally, only 8(16%) women had repeat caesarean section. No case of scar dehiscence or uterine rupture was seen. **Conclusion:** Mifepristone is a safe, efficient and suitable agent for cervical ripening and for initiation of labor when given 48hr before labour induction.

Key words: Bishop's score, Labour induction, Mifepristone, Scar dehiscence

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Introduction

A sustained increase in caesarean deliveries the world over has been the subject of international debate. In a country like India it assumes a different perspective as the standard of health care is often unmonitored and uneven. Therefore any effort to reduce the number of caesarean births needs to be viewed with fresh zeal. Whilst it is undeniable that reduction in the primary caesarean section rate would eventually contribute to an overall reduction in the total number of abdominal births, it would be pertinent to approach the subject of Vaginal Birth after (VABC) with renewed vigour.

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Induction of labour in scarred uteri is controversial with a steadily reducing armamentarium of pharmacological / mechanical agents. In light of this setting Mifepristone [RU486] has been proposed and utilized by some workers to ripen the cervix favorably for labour to ensue spontaneously or to add another agent/technique in order to achieve vaginal birth. The ideal agent for labour induction should be effective, non invasive, economical, rapid in action and safe for mother and fetus. The risk of failed induction and the possibility of uterine rupture are major concerns of clinicians caring for women undergoing induction of labour after a previous caesarean delivery. The best methods, efficacy and safety of cervical ripening and / or induction in this

population have not been established [1]. Mifepristone [Ru-486] is a 19-nor setroid that binds strongly to progesterone receptor and inhibits the activity of progesterone at cellular level with potent anti-progestogenic, antiglucocorticoid and weak antiandrogenic action. It has minimal effect on uterine contractility as it ripens the cervix, making it an option for use in induction of labour to enhance the rates of spontaneous labour, with no apparent maternal or neonatal side effects [2]. In late pregnancy the uterus is sensitized by Mifepristone to prostaglandins and promotes cervical ripening which induces labour. Various studies conducted on induction of labour in live term pregnancies with Mifepristone in doses of 200-400mg have shown an improvement in cervical ripeness and increased rates of spontaneous labour with no serious maternal or fetal side effects [3].

Available evidence for methods of labour induction in previously scarred uterus is scarce or absent because no randomized trials have compared the outcome of induction of labour in women with prior caesareans with elective repeat caesarean delivery, data is mostly limited to findings from retrospective studies of fair and poor quality. This data includes inconsistent definitions of uterine rupture/ dehiscence, wide variation in labour induction protocols (eg. timing and dosage of prostaglandins and/ or oxytocin administration), heterogeneity in patient population, and inconsistency in primary outcome measures [4]. The sequential use of mifepristone and prostaglandins has been researched for termination of pregnancy in all trimesters and for labour induction in cases of fetal demise [5].

In this context, the present study is an attempt to evaluate the efficacy and safety of mifepristone (RU-486) for labour induction in women with previous one caesarean delivery.

Material and Methods

The present study is a hospital based prospective study which was conducted in Department of Obstetrics and gynaecology SGRRIM&HS Dehradun, over a period of two years (September 2013 – September 2015) after prior approval from Ethics committee. A total of 50 women with prior one lower segment caesarean delivery having a clear medical / or Obstetrical indication for induction of labour and willing for VBAC were selected for this study.

Inclusion criteria

1.Women with ultrasonographically confirmed singleton pregnancy of 37-42 weeks duration, with cephalic presentation and no contraindication for vaginal delivery are included if, labor induction is indicated and induction could be postponed for 48 hours.
2. Bishop's score <5
3. No cephalopelvic disproporition
4. Reactive fetal heart pattern in live fetus

Exclusion criteria

1.Two or more previous caesarean section / vertical uterine incision / myomectomy or any obstetric contraindication to labour induction.
2.Ruptured membranes or evidence of chorioamnionitis.
3.Low lying placenta (Placental localization by USG was a prerequisite before performing the procedure)
4. Suspected placental abruption/Significant antepartum haemorrhage
5. Non reassuring FHR (in live fetus)
6. Non vertex fetal presentation

After obtaining detailed history, examination and relevant investigations, informed consent was obtained and pre induction Bishop's score was recorded in all women. Women who meet the inclusion criteria received Tab mifepristone 200mg orally, which was repeated after 24hrs. Reassessment of Bishop'score was done 48 hrs after the first dose and patient allowed to go into spontaneous labour. Labour was augmented with oxytocin infusion and/or ARM according to the requirement of the case if progress was not optimal.

The parameters noted were Pre and Post induction Bishop's score, Induction to delivery interval, mode and route of delivery, indication of caesarean delivery, outcome of labour, any maternal or neonatal complications.

Observation

The study group comprised of 50 patients with maximum number of patients 40 (80%) belonging to age group 21yrs to 30 yrs. The youngest patient in the study group was 21yr old and the oldest was 39 yrs old. Mean gestational age was 40.1wk. The commonest indication for induction of labour was postdatism [Table-1], which is seen in 36 (72%) patients.

The other indications for induction were fetal demise 6(12%), IUGR 3(6%).Severe PIH 3(6%), IHCP 1(2%) and GDM 1(2%). Pre induction Bishop's score [Table -2] was '0-2' in 11 (22%) patients and 3-5 in 39 (78%) patients.

Table 1: indications for induction of labour.

Indication for Induction	No. of patients (n=50)
Post datism	36 (72%)
Intra uterine fetal demise	6 (12%)
IUGR¶	3 (6%)
Severe PET	3 (6%)
IHCP*	1(2%)
Gestational diabetes	1(2%)

*Intra hepatic cholestasis of pregnancy,¶ Intrauterine growth retardation

Table 2: Pre induction Bishop's score.

Bishop's Score	No. of patients (n=50)
0-2	11 (22%)
3-5	39 (78%)

After giving 2 tablets of 200mg of Mifeprostrone orally 24hrs apart, Bishop's score was reassessed 48 hrs after the first dose. Post induction bishop's score[Table-3] was between 6-12 in 48 (96%) patients and only 2 (4%)patient persisted poor bishop's score of less than 6. Mean pre induction Bishop's score was (2.34±0.84SD) and mean post induction Bishop's score was (8.24±1.65SD) [table-4]

Table 3: Post induction Bishop's score.

Bishop's Score	No. of patients (n=50)
4-5	2 (4%)
6-12	48 (96%)

Table 4: Mean Pre and Post induction Bishop's score.

Bishop's score	Mean±SD(n=50)
Pre induction score	2.34±0.84
Post induction score at 48hr	8.24±1.65

Induction – delivery interval was taken from the time of reassessment of bishop's score till the delivery of the fetus. Mean inducation-delivery interval was 31.54hr [Table-5]. It was observed that induction-delivery interval was less in patients who were induced for intrauterine fetal demise.

Table 5: Mean induction-delivery interval.

Mean induction – delivery interval	No. of patients (n=42)
11-20 hr	7 (16.6%)
21-30 hr	7 (16.6%)
31-40 hr	21 (50%)
41-50 hr	6 (14.5%)
51-60 hr	1 (2.3%)

In 35 (70%) labour was augmented with oxytocin and /or artificial rupture of membranes, whereas 7 (14%) patients did not require any augmentation with oxytocin, having entered active labour spontaneously. In our study 42 (84%) women delivered vaginally, of which 5 women required operative vaginal delivery. In 8 (16%) women repeat caesarean section

was done. The main indication for repeat caesarean section [Table – 6] was fetal distress 5 (10%) patients. Table-7 shows main maternal complications seen in the study group patients. 2 (4%) patients had abruptio placentae, 4 (8%) patients had mild to mod PPH and one patient had caesarean hysterectomy for severe PPH. No case of scar dehiscence or uterine rupture was seen. There were 3 (6%) babies who were born with apgar score less than 7 at birth [Table – 8] there were no major neonatal complication or mortality noted in the study group.

Table 6: Indication of repeat caesarean section.

Indications of caesarean section	No. of patients (n=8)
Fetal distress	5
NPOL*	1
Failed induction	1
Refusal for Trial of labour(*)	1

*Non progress of labour,¶ after earlier consent the patient changed her mind

Table 7: Maternal complications.

Maternal complications	No of patients (n=50)
NRFHR *	3
MSAF ¶	1
Failed inductions	5
Abruptio placentae	2
Post partum Haemorrhage	5

*Non reassuring fetal heart rate,¶ Meconeum stained amniotic fluid

Table 8 Apgar < 7 at births.

Apgar (min)	No. of babies
1	3
5	Nil

Abbreviations:-

GDM – Gestational diabetes mellitus, IUGR – intrauterine growth restriction, IHCP – Intrahepatic cholestasis of pregnancy, MSAF – Meconium stained amniotic fluid,TOL-Trial of labour, VBAC – vaginal birth after caesarean section.

Discussion

The earliest studies on the use of mifepristone for induction of labour were done by Frydman and colleagues in 1990's [6]. Also it was reported that mifepristone is better than a placebo in ripening the cervix and there is evidence of a possible reduction in the incidence of caesarean section rates following mifepristone treatment. The present study demonstrated significant efficacy of mifepriestone for cervical ripening and induction of labour after drug administration as more women had favourable bishop's score at the end of 48 hrs. Similar study done by Lelaidier C, in 1994[7], also reported its safety and efficacy as a labour induction method in women at term with prior caesarean section. In one such study of over 12,000 women with singleton gestations ≥ 39 weeks and one low transverse caesarean delivery, women undergoing induction of labour at 39(0/7 to 3/7) weeks without an acute obstetric medical indication were more likely to deliver vaginally than those managed expectantly (73.8 versus 61.3 percent; odds ratio 1.31,95% CI 1.03-1.67) [8]. These findings affirm the relatively high probability of vaginal delivery with labour induction after a previous caesarean delivery. The increased risk of placenta accreta and placenta praevia [9,10] with each additional caesarean section and the decreased risk of uterine rupture after VBAC,

may be a reason to choose for trial of labour for families who plan on having more than two children. In general, the success rate of TOL is approximately75% [11] and the associated risk of uterine rupture 0.4-0.7%[12,13-15]. Our study also demonstrated that 84% patients had successful VBAC without any major maternal or neonatal outcome. Further studies with a large cohort of patients should be undertaken to support the efficacy and safety of mifepristone in labour induction in previously sectioned women.

Conclusion

Mifepristone (RU-486) is a safe, efficient and suitable agent for cervical ripening and for initiation of labour when given 48 hr before labour induction. In previously scarred uterus, when other methods of induction of labour are contraindicated, mifeprostreone is a wonder drug to be used for labour induction. Even though mifepristone is expensive, as it can be administered on outpatient basis and significantly less need for hospital admission, it may be speculated that, there might be overall savings in this group. Induction of labour is facilitated in term women with prior caesarean section by the use of mifepristone. This induction agent appears safe and useful with no adverse events on the fetus or mother

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