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Audit Report

Clinical audit on period of gestation at induction of labor in singleton low risk women at a tertiary care centre in South India: M. O. S. C. Medical College, Kolenchery

Basil Mary Eldo[1]*, Georgy Joy Eralil[2]

[1]Malankara Orthodox Syrian Church Medical College, Kolenchery, Kerala, India
[2]Department Obstetrics and Gynecology, Malankara Orthodox Syrian Church Medical College, Kolenchery, Kerala, India

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***Correspondence:**
Dr. Basil Mary Eldo,
E-mail: drbasilmaryeldo@gmail.com

ABSTRACT

This audit evaluates the period of gestation at which labor induction was performed in singleton low-risk women at MOSC medical college, Kolenchery. The objective was to identify inadequacies in the process and indications for labor induction to ensure compliance with recognized guidelines, improve patient care, and raise the standard of labor induction practices. Over a two-month period, 376 deliveries were recorded, of which 137 were singleton uncomplicated pregnancies. Among these, 77 women (56%) were induced at or after 39 weeks, while 60 women (44%) were induced before 39 weeks. This report presents a statistical analysis of the induction practices and recommends modifications to enhance adherence to established criteria for labor induction.

Keywords: Clinical audit, Gestation, Kolenchery

INTRODUCTION

Induction of labour refers to stimulating the uterus to begin labour. A good labour pattern is established when there are three contractions in 10 minutes, each lasting more than 40.

Induction of labour for a low risk/uncomplicated pregnancy is recommended to be carried out only after 39 weeks (FOGSI-ICOG 2018).[1] Uncomplicated pregnancy is a composite measure defined by the absence of both pre-existing medical co-morbidities (e.g., type 2 diabetes, essential hypertension), pre-existing/early obstetric (e.g., multiple pregnancy) or new-onset obstetric (e.g., gestational diabetes, pre-eclampsia) complications.[2] At 39 weeks in low-risk nulliparous women, induction of labour results in a lower frequency of caesarean delivery without a statistically significant change in the frequency of a composite of adverse perinatal outcomes.

The time of induction in cases with complications may vary-PROM at more than 37 weeks and P-PROM more than 34 weeks. Women with preeclampsia, at 37 weeks or earlier if indicated or for maternal or foetal compromise. At 38 weeks of gestation if diabetes is controlled on insulin/oral hypoglycaemics. Induction for fetal growth restriction is guided by the severity of fetal growth restriction and any deterioration in the Doppler parameters. In uncomplicated twin pregnancy, labour induced at 37 weeks. Contraindications of induction of labour in twin pregnancy are monoamniotic twins and first twin non cephalic. Between 37-38 weeks in obstetric cholestasis, immediately following intrauterine foetal demise, in women with a previous caesarean section, if favourable cervix, amniotomy followed by oxytocin infusion and if unfavourable cervix, use of mechanical methods like transcervical Foley catheter is considered, followed by amniotomy and oxytocin.[3]

Cervical ripening

Cervical ripening, often an initial component of labour induction, is the process of softening and effacing the cervix as well as stimulating early cervical dilation.

Objective

This audit aims to analyse the inadequacies in the process and indications of induction of labour in our institution. The intention is to bring about the necessary modifications so that labour induction satisfies recognised criteria, which will raise the bar for labour induction and, in turn, improve patient care.

METHODS

methods for of cervical ripening were as follows:

Prostaglandin PGE1 (Misoprostol)

Misoprostol has been approved by drug controller general of India (DCGI) for cervical ripening. Oral misoprostol is given as 25 mcg tablets every 2 hours up to 5 doses and the cervix is reassessed the next day. If cervix is still unfavourable, 25 mcg misoprostol is kept vaginaly 4 hours apart up to 3-4 doses.

Next day, regardless of the bishop's score oxytocin is started or amniotomy performed if favourable.

Prostaglandins (PG) E2 (Dinoprostone)

Available in two forms in India for cervical ripening. In our institute dinoprostone vaginal pessary is used occasionally.

Membranes sweeping

It solely improves rate of entering spontaneous labour and can be repeated if labour does not start spontaneously.

It is suitable for non-urgent indications for term pregnancy termination because interval between sweeping membranes and initiation of labour can be longer than other methods of cervical ripening.[4]

Foley's catheter

The Foley catheter is an effective alternative to prostaglandins for cervical ripening and preferred in cases of scarred uterus and unfavourable cervix provided there are no signs of infection.

Extra amniotic saline instillation (EASI)

EASI is similar to a foley's induction but in these cases, under aseptic precautions 200 ml of normal saline is introduced through the catheter into the uterine cavity as this may precipitate release of natural prostaglandins along with mechanical traction at the cervix.[5]

Oxytocin

Intravenous oxytocin is the most commonly used method of induction for women with a favourable cervix (Modified Bishop score >6). Oxytocin can be used alone, in combination with amniotomy, or following cervical ripening. It can be used for induction as well as augmentation of labour.

Amniotomy/ artificial rupture of membranes

If membranes have been ruptured for 6 hours, give prophylactic antibiotics, inj. ampicillin 500 mg IV, every six hours until delivery.[6]

Failed induction

Well established risk factors for failed induction are bishop's score <6, nulliparity, gestational age <41 weeks, maternal age >30 years, pregnancy complicated by preeclampsia, premature rupture of membranes (PROM), isolated oligohydraminos, gestational diabetes, and hypertension.[7]

Study design

It was a prospective audit.

Place and duration

Department of obstetrics and gynaecology-MOSC medical college, Kolenchery from the 01 March 2024 to 01 May 2024.

Methodology used

The study was carried out in MOSC medical college, Kolenchery to look at the indications, process and outcome of induction of labor.

The medical records of all patients with uncomplicated (low risk) singleton pregnancy at a gestation age ≥39 weeks who underwent induction of labor are to be included in the audit.

Data is to be collected from labor room records and the indication, method and outcome of induction of labor (IOL) are to be assessed and evaluated in all patients.

Audit criteria

Inclusion criteria

Medical records of patients with uncomplicated (low risk) singleton pregnancy at a gestation age ≥39 weeks who underwent induction of labor were included.[1]

Exclusion criteria

Patients having pregnancy with any complications were excluded.

Data collection

Data were collected from the labour room birth/delivery register at MOSC medical college over a two-month period. The records reviewed included gestational age at induction for singleton low-risk pregnancies.

Sample size

Out of 376 total deliveries, 137 singleton low-risk pregnancies were analyzed. Pregnancies with complications/risk factors and elective or emergency caeserean sections without induction were excluded.

Statistical analysis

Descriptive statistics were used to determine the proportion of inductions performed before and at or after 39 weeks. A chi-square test was conducted to assess the significance of deviations from the recommended guidelines.

RESULTS

Distribution of inductions

Total number of deliveries in the duration of 2 months (March and April)=376 (166 + 210), total number of inductions of labor in singleton low risk women=137 (65 + 72), inductions at or after 39 weeks: 77 women (56%) and inductions before 39 weeks: 60 women (44%)

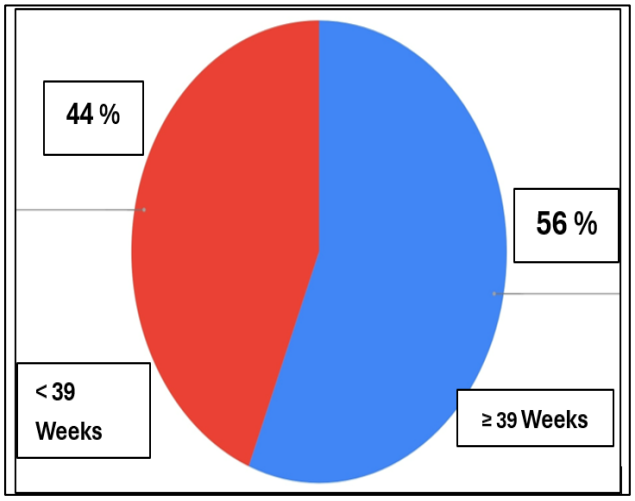

Figure 1: Period of gestation at induction of labor in singleton low risk women.

The chi-square test revealed a p=0.15, indicating that the difference between the proportions of inductions before and after 39 weeks is not statistically significant at the 0.05 level. This suggests that while there is a noticeable proportion of inductions before 39 weeks, the deviation from the guideline may not be statistically significant in this sample.

Mode of induction and outcome of induction

Mode of induction and outcome of induction were shown in the Figures 2 and 3 below.

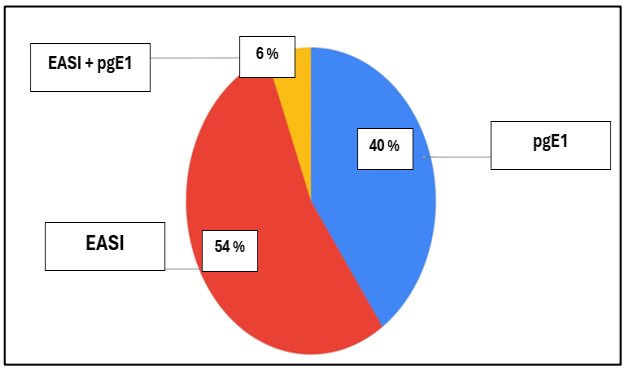

Figure 2: Various modes of induction.

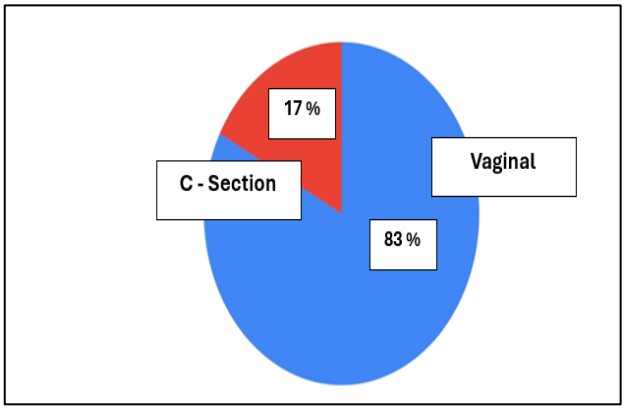

Figure 3: Outcome of induction.

DISCUSSION

Compliance and deviations

This audit revealed that 44% of inductions in singleton low-risk women occurred before 39 weeks of gestation, while only 56% were induced at or after 39 weeks. Although the chi-square test indicated that deviation was not statistically significant (p=0.15), findings suggest a trend toward early induction, which may not align with the recommendations of the FOGSI-ICOG 2018 guidelines. These guidelines clearly advocate induction of labour in low-risk pregnancies only at/beyond 39 completed weeks to optimize maternal and perinatal outcomes.[8]

The mode of induction varied, with a combination of pharmacological and mechanical methods used based on cervical favourability and prior uterine surgery.

Misoprostol (PGE1) was the most frequently used agent, which aligns with the standard practice in Indian tertiary centres due to its effectiveness and cost-efficiency. This is consistent with the findings of a retrospective observational audit conducted at Christian medical college, Vellore, which analysed 500 low-risk pregnancies over a six-month period. In that study, 65% of women were induced at or beyond 39 weeks, and 35% were induced earlier, most commonly due to clinician discretion or non-specific maternal concerns.

Indications for early induction

Further investigation is needed to understand the specific indications for early inductions. While some early inductions in our study may be justified based on evolving maternal or fetal conditions not initially categorized as high-risk, a significant proportion lacked clearly documented indications meeting guideline criteria. This practice may inadvertently increase the risk of failed inductions, operative deliveries, and neonatal intensive care admissions.

Compared to the CMC Vellore audit, our rate of early induction (44%) is higher, suggesting a greater need for protocol reinforcement at our centre. Notably, both studies indicate that the implementation of strict induction protocols and multidisciplinary audit discussions can reduce early, non-indicated inductions and improve compliance with evidence-based thresholds.

The outcome analysis in our study showed a satisfactory proportion of successful inductions and vaginal deliveries, although detailed stratification based on gestational age and Bishop's score is necessary to identify specific risk patterns for failed inductions. Furthermore, age and obstetric score analyses revealed that most inductions occurred in younger women with lower parity, which may influence the choice and outcome of the induction methods.

Recommendations from previous audits, including the CMC Vellore audit, emphasize the importance of maintaining an induction register, strict documentation of indications, and periodic case-based discussions to improve adherence to standards.[9]

Incorporating these strategies at MOSC medical college could enhance audit responsiveness and facilitate sustained improvement.

CONCLUSION

The audit highlights that while a majority of inductions were performed at or after 39 weeks, a significant proportion occurred earlier. Addressing this discrepancy through updated protocols, staff training, and continuous monitoring will help align practices with established guidelines and improve patient care.

Recommendations

Review and update protocols

Immediate action: Review and update induction protocols to ensure alignment with the 39-week guideline unless specific indications are present.
Training: Conduct training sessions for the staff on the importance of adhering to gestational age guidelines for induction.

Monitoring and feedback

Ongoing monitoring: Implement a system for ongoing monitoring of induction practices and outcomes.

Regular audits: Schedule regular audits to assess compliance and address any deviations.

Patient and staff education

Patient education: Inform patients about the timing of induction and its implications to ensure they are well-informed.

Staff training: Provide continuous education on best practices and evidence-based guidelines for labor induction.

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APPENDIX

Audit proforma

Clinical audit on period of gestation at induction of labor in singleton low risk women at MOSC medical college, Kolenchery

Name-

Age-

Hospital number-

Obstetric score-

LMP-

POG/gestational age-

<39 weeks	≥39 weeks

Modified Bishops score-

<8	≥8

Mode of induction-

pgE1	pgE2	EASI	EASI +pgE1

Outcome of induction-successful/failed

Type of delivery-

Vaginal	CS