Posted on Authorea 29 Mar 2022 — The copyright holder is the author/funder. All rights reserved. No reuse without permission. — https://doi.org/10.22541/au.164857864.40032857/v1 — This a preprint and has not been peer reviewed. Data may be preliminary.

VBAC with trans cervical Foley catheter: a boon or a bane

shazia parveen[1] and Ummay Kulsoom[1]

[1]Jawaharlal Nehru Medical College and Hospital

March 29, 2022

Abstract

ABSTRACT Objective: To determine the efficacy and safety of trans cervical Foley catheter for cervical ripening and induction of labor in women with previous cesarean section Introduction: Trial of labor after cesarean (TOLAC) is a method of achieving a successful vaginal birth in women with a history of prior cesarean section. Foley catheter balloon is the most commonly used mechanical device for labor induction, which is a mechanical dilator of the cervix and also stimulates release of endogenous prostaglandins from the fetal membranes. It is a very successful preinduction cervical ripening agent in women with previous caesarean section with an unfavourable cervix Method: prospective clinical observational study conducted in the Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Aligarh Muslim University, Aligarh during 2019-2021. A total of hundred (100) pregnant women with previous cesarean delivery who had an unfavorable cervix (Bishop score ? 6) were included in the study. The data was analysed by statistical test using SPPS software version 25.0 Result: In our study maximum number of women were induced for hypertensive disorders. 58 % females had a successful vaginal delivery with minimal maternal and neonatal morbidity. Among those who underwent repeat cesarean section, the most common indication was fetal distress. Conclusion: Our study showed that trans cervical Foley catheter is a safe, effective and affordable method of cervical ripening and induction of labor in women with previous scarred uterus with very less maternal and neonatal morbidity. KEY WORDS Foley catheter, VBAC, TOLAC, labor induction

1. **Title: VBAC with trans cervical Foley catheter: a boon or a bane**
2. **AuthorsDR. SHAZIA PARVEEN**Assistant professor, Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Aligarh Muslim University, Aligarh, Uttar Pradesh, 202001. Email: shzparveen@gmail.com**DR UMMAY KULSOOM**Junior resident, Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Aligarh Muslim University, Aligarh, Uttar Pradesh, 202001. Email: ummay.kulsoom91@gmail.com
3. **Corresponding authorDR UMMAY KULSOOM**Junior resident, Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Aligarh Muslim University, Aligarh, Uttar Pradesh, 202001. Email: ummay.kulsoom91@gmail.com
4. **Running title: Use of transcervical foley catheter for cervical ripening and labor induction in women with previous cesarean section.**

ABSTRACT

Objective : To determine the efficacy and safety of trans cervical Foley catheter for cervical ripening and induction of labor in women with previous cesarean section

Design : prospective clinical observational study

Sample : pregnant women with previous cesarean section admitted in labor ward for induction of labor

Introduction : Trial of labor after cesarean (TOLAC) is a method of achieving a successful vaginal birth in women with a history of prior cesarean section. Foley catheter balloon is the most commonly used mechanical device for labor induction, which is a mechanical dilator of the cervix and also stimulates release

Posted on Authorea 29 Mar 2022 — The copyright holder is the author/funder. All rights reserved. No reuse without permission. — https://doi.org/10.22541/au.164857864.40032857/v1 — This a preprint and has not been peer reviewed. Data may be preliminary.

of endogenous prostaglandins from the fetal membranes. It is a very successful preinduction cervical ripening agent in women with previous caesarean section with an unfavourable cervix

*Method***:** study conducted in the Department of Obstetrics and Gynecology, Jawaharlal Nehru Medical College and Hospital, Aligarh Muslim University, Aligarh during 2019-2021. A total of hundred (100) pregnant women with previous cesarean delivery who had an unfavorable cervix (Bishop score [?] 6) were included in the study. The data was analysed by statistical test using SPPS software version 25.0

Main outcome measure: successful vaginal delivery

Result: In our study maximum number of women were induced for hypertensive disorders. 58 % females had a successful vaginal delivery with minimal maternal and neonatal morbidity. Among those who underwent repeat cesarean section, the most common indication was fetal distress.

Conclusion: Our study showed that trans cervical Foley catheter is a safe, effective and affordable method of cervical ripening and induction of labor in women with previous scarred uterus with very less maternal and neonatal morbidity.

Funding : nil

KEY WORDS

Foley catheter, VBAC, TOLAC, labor induction

Introduction

Induction of labor is the most frequent obstetrical practice that artificially starts the process of uterine contractions, cervical ripening and effacement. Trial of labor after cesarean (TOLAC) is a method of achieving a successful vaginal birth in women with a history of prior cesarean section. Various induction methods have been used to achieve a successful vaginal birth after cesarean (VBAC) but none has been an ideal agent. Prostaglandins have been effectively used for labor induction but their safety in prior cesarean section has been a matter of concern. Mechanical methods were developed to promote cervical ripening and the onset of labor by dilating the cervix as the likelihood of a successful vaginal delivery decreases in the absence of a ripe cervix. Hygroscopic and osmotic dilators are effective, but they might be associated with a risk of maternal infection and hence are seldom used now a days.[1] Foley catheter balloon is the most commonly used mechanical device for labor induction, which acts not only as a mechanical dilator of the cervix but also stimulates release of endogenous prostaglandins from the fetal membranes. Foley catheter is a very successful preinduction cervical ripening agent in women with previous caesarean section with an unfavourable cervix[2,3].

Balloon catheters are absolutely contraindicated in patients with a low lying placenta or antepartum hemorrhage while cervicitis or any active genital infection and ruptured membranes are relative contraindications.

Efficacy and safety of trans cervical Foley catheter versus intravaginal misoprostol for labor induction has been compared in recent studies and it was shown that intravaginal misoprostol is associated with a shorter induction to delivery interval while trans cervical Foley catheter is associated with a lower incidence of uterine hyperstimulation during labor[4].

We conducted a prospective cohort study to determine the efficacy of intracervical Foley catheter for cervical ripening and labor induction in women with previous cesarean section.

Material and Methods

The present study was a prospective clinical observational study was conducted in the Department of Obstetrics and Gynecology in collaboration with the Department of Paediatrics, Jawaharlal Nehru Medical College and Hospital, Aligarh Muslim University, Aligarh during 2019-2021. A total of hundred (100) pregnant women with previous cesarean delivery who consented for TOLAC and had an unfavorable cervix (Bishop score [?] 6) were included in the study.

Posted on Authorea 29 Mar 2022 — The copyright holder is the author/funder. All rights reserved. No reuse without permission. — https://doi.org/10.22541/au.164857864.40032857/v1 — This a preprint and has not been peer reviewed. Data may be preliminary.

Exclusion Criteria was any condition precluding vaginal delivery, prior history of uterine surgery other than LSCS, abnormal placentation, active infection of genital tract, abnormal fetal heart rate (FHR), latex allergy or ruptured membranes.

After detailed history and examination, pregnant woman was made to lie down in lithotomy position and under direct visualization, a 16-French Foley catheter with a 30-mL balloon was inserted in to the internal os of cervix so as to reach the lower uterine segment. The balloon was inflated with 60 mL of sterile water followed by 30 ml at 8 hours and the catheter was held on the thigh by a tape to maintain the traction.

Monitoring of women was done through periodic fetal heart rate monitoring, non-stress test and careful watch for signs and symptoms of scar tenderness and fetal distress.

The catheter was removed in case of expulsion, non-reassuring fetal heart rate tracing, tachysystole (more than five contractions per 10 minutes), spontaneous membrane rupture, onset of active labor or after 24 hours of placement.

All the tests were performed using computer program SPSS 25.0.

A p-value of <0.05 was considered as significant

Observations And Results

The mean age of women induced with Foley catheter was 27.59 ± 3.59 years. The mean gestational age was 39.11 ± 1.31 weeks. Our study had 69.0% primiparous women and majority of the women in our study belonged to rural areas (Table 1).

The most common indication for induction was hypertensive disorders (30.0%) followed by gestational age >40 weeks (16.0%). (Table 2)

Improvement in Bishop score was significant in these women with a mean preinduction Bishop score of 3.54 ± 0.63 and a postinduction Bishop score of 8.23 ± 2.49. the mean induction to delivery interval was 21.38 ± 8.22 hours. (Table 3)

Women induced with Foley catheter had a significantly higher rate of successful vaginal delivery. There were 58.0% women who delivered vaginally compared to 42.0% women who underwent a repeat cesarean section. (Table 4)

The most common indication for cesarean section was fetal distress (FD) which developed in 85.7% women (Table 5)

There were only 2 women who developed uterine tachysystole while no case of uterine rupture was reported (Table 6). Mean birth weight of neonates in our study was 2.76± 0.37 kg. Of all the neonates born, 22.0% were admitted to NICU of which 7.0% neonates developed meconium aspiration syndrome (MAS) and 10.0% developed respiratory distress syndrome (RDS). (Table 7)

Discussion

Induction of labor (IOL) has been on a rising trend all over the world and is also the preferred choice for women with history of cesarean delivery. Due to life threatening complications associated with repeat cesarean section many women are now opting for VBAC. As transcervical Foley catheter is associated with very low risk of uterine tachysystole it is useful for induction of patients who are at increased risk of uterine dehiscence and rupture such as women with previous cesarean section and those with high risk of fetal hypoxemia like fetal growth restriction, post-term pregnancy, oligohydramnios and placental insufficiency.

Worldwide studies have been conducted to show promising results of successful vaginal birth in women with a previous cesarean section who opt for vaginal delivery and labor induction.

In low resource settings like India, Foley catheter is a conventionally affordable and feasible method used for preinduction cervical ripening This mechanical method however carries a potential danger of accidental

Posted on Authorea 29 Mar 2022 — The copyright holder is the author/funder. All rights reserved. No reuse without permission. — https://doi.org/10.22541/au.164857864.40032857/v1 — This a preprint and has not been peer reviewed. Data may be preliminary.

rupture of membranes, cord prolapse, chorioamnionitis and pyrexia because of infection.[5]

In our study majority of the women were induced for hypertensive disorders which was in coherence with the study conducted by**Hazel Gonsalves** [6] and **Claartje M. Huisman et al** [7].

Induction to delivery interval was comparable to the study conducted by**Claartje M. Huisman et al** [7].

Mode of delivery in our study was comparable to the study conducted by**Hazel Gonsalves** [6] and **Claartje M. Huisman et al** [7]

Uterine tachysystole was reported in only 2.0% women in our study and this was in coherence with the study conducted by **Claartje M. Huisman et al** [7]

Indications for cesarean section were comparable to the studies conducted by **Hazel Gonsalves** [6] and**Claartje M. Huisman et al** [7].

There were no significant maternal and neonatal complications in our study.

Main findings : foley catheter is a successful method for labor indiction in women with previous cesarean section

Strengths and limitations : due to ongoojng covid crisis the present study had a smaller sample size

Interpretation: trans cervical Foley catheter can be recommended as the choice for preinduction cervical ripening and induction of labor in women with previous cesarean section.

Conclusion

Our study suggests that trans cervical Foley catheter is efficient in achieving cervical ripening and successful labor with reduction in latent phase of labor and total delivery time without increasing the rate of caesarean section, uterine tachysystole and uterine rupture. Considering the good performance of maternal and neonatal outcome apart from the cost effectiveness, affordability and easy availability, trans cervical Foley catheter can be recommended as the choice for preinduction cervical ripening and induction of labor in women with previous cesarean section.

Conflict of interest : none declared

Contribution to authorship : dr shazia parveen: conception, planning, writing up, final proof

reading

Dr ummay kulsoom: planning, carrying out, data analysis, writing

up, editing, proof reading

Ethical approval : the study was approved by the institutional ethical committee. Dated: 14/12/2019

Funding : no funding sources

References

1. Jozwiak M, Bloemenkamp KW, Kelly AJ, Mol BW, Irion O, Boulvain M Cochrane Database Syst Rev. 2012 Mar 14; (3):CD001233.
2. Meetei LT, Suri V, Aggarwal N. Induction of labor in patients with previous cesarean section with unfavorable cervix. J Med Soc 2014;28:29-33 DOI: 10.4103/0972-4958.135223
3. Patabendige M, Jayawardane A. Foley catheter for cervical priming in induction of labour at University Obstetrics Unit, Colombo, Sri Lanka: a clinical audit with a patient satisfaction survey. BMC Res Notes. 2017 Apr 12;10(1):155. doi: 10.1186/s13104-017-2478-z. PMID: 28403891; PMCID: PMC5389149.
4. Noor N, Ansari M, Ali SM, Parveen S. Foley Catheter versus Vaginal Misoprostol for Labour Induction. Int J Reprod Med. 2015;2015:845735. doi: 10.1155/2015/845735. Epub 2015 Oct 18. PMID: 26557725; PMCID: PMC4628666.

Posted on Authorea 29 Mar 2022 — The copyright holder is the author/funder. All rights reserved. No reuse without permission. — https://doi.org/10.22541/au.164857864.40032857/v1 — This a preprint and has not been peer reviewed. Data may be preliminary.

5. Bujold E, Blackwell SC, Gauthier RJ. Cervical ripening with transcervical foley catheter and the risk of uterine rupture. Obstet Gynecol 2004; 103:18–23.
6. Gonsalves H, Al-Riyami N, Al-Dughaishi T, Gowri V, Al-Azri M, Salahuddin A. Use of Intracervical Foley Catheter for Induction of Labour in Cases of Previous Caesarean Section: Experience of a single tertiary centre in Oman. Sultan Qaboos Univ Med J. 2016 Nov;16(4):e445-e450. doi: 10.18295/squmj.2016.16.04.007. Epub 2016 Nov 30. PMID: 28003890; PMCID: PMC5135455.
7. Huisman, CMA, ten Eikelder, MLG, Mast, K, et al. The PROBAAT-S project group. Balloon catheter for induction of labor in women with one previous cesarean and an unfavorable cervix. Acta Obstet Gynecol Scand. 2019; 98: 920- 928.

Hosted file

`Tables foley.docx` available at https://authorea.com/users/467895/articles/561794-vbac-with-trans-cervical-foley-catheter-a-boon-or-a-bane