Research Article

Patient Perception and Satisfaction with Cervical Massage for Labour Induction: A Prospective Study in Low-Risk Pregnant Women

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ABSTRACT

Introduction: Cervical massage is a technique aimed at stimulating cervical ripening by encouraging the release of natural prostaglandins. It may reduce the need for medical induction by promoting the normal physiological onset of labour. Although studies have shown its potential to soften and efface the cervix, there is limited research on patient perception and satisfaction with this method. This study explores women's pain perception and satisfaction with cervical massage as an alternative to more invasive induction methods, such as membrane sweeping.

Methods: This prospective, mono-centric study was conducted among low-risk pregnant women at a tertiary care hospital in Eastern India. The participants underwent cervical massage once they reached their expected date of delivery (EDD). Exclusion criteria included women with growth-restricted foetuses or those requiring formal induction. Data on pain during the procedure were collected using a Visual Analogue Scale (VAS). Postnatal questionnaires assessed patients' experiences, including whether they would recommend or repeat the procedure.

Results: Of the 203 women screened, 104 were enrolled (52 primiparas and 52 multiparas). The majority (93%) had a single cervical massage. Pain scores ranged from no pain (31.73%) to moderate pain (16.35%). Regarding satisfaction, 38.46% of participants would recommend the procedure to others or agree to repeat it in subsequent pregnancies. The interval between cervical massage and labour onset was noted, with a higher rate of vaginal delivery among multiparas. Only 0.96% had prior knowledge of cervical massage.

Discussion: While cervical massage showed less discomfort compared to membrane sweeping, only 38.46% of women would consider repeating it. This supports the need for further research on its effectiveness for cervical ripening and induction. The study highlights the need for more alternatives to formal induction methods.

Conclusion: Cervical massage is a promising alternative to membrane sweeping, but its efficacy and patient acceptability require further investigation.

INTRODUCTION

Cervical massage involves massaging or stimulating the cervix to encourage dilation and the release of natural prostaglandins.[1] Some studies suggest that cervical massage, when done correctly, may help in softening and effacing the cervix, potentially reducing the need for medical induction. Cervical massage, just like membrane sweeping, may be used to promote the normal physiological onset of labour by releasing localized prostaglandins F2a, phospholipase A2 and cytokines from the intrauterine tissues.[1] These hormones act on the cervix to augment cervical ripening, potentially instigating uterine contractions. The aim of this intervention is to soften and ripen the cervix, increasing cervical favourability and promoting uterine activity, to stimulate spontaneous uterine contractions potentially leading to the onset of labour and the avoidance of a formal induction of labour. When inducing labour, the favourability of the cervix is assessed through a vaginal examination and the use of the Bishop score, which evaluates cervical dilatation, consistency, length, position, and the station of the presenting part of the foetus.[2]

Studies have suggested that about 5-10% of primiparas go past their due date, while multiparas have a lower risk, typically around 3-

5%. Studies also suggest that approximately 25-30% of primiparas require induction of labour, while the rate for multiparas is usually lower, around 10-20%. Hence, a balance needs to be maintained between the patients' pain perception and success of induction methods used, especially among first time mothers. While there had been multiple studies on the various aspects of membrane sweeping, cervical massage is a relatively new and emerging concept and as per the NICE guidelines is an area for future research recommendations.[3] There is a dearth of published literature on the patients' perception of the procedure of cervical massage and the process itself has been evaluated in only two studies published in the international literature.[4,5]

In this study, we aim to assess patients' perception of pain with this procedure, as well as to evaluate their satisfaction that is whether the women would agree to repeat this same process in their next pregnancy or recommend it to other women based on their own experience.

METHODS

A prospective, mono-centric study was conducted among low-risk pregnant women with term gestation, who were scheduled to undergo cervical massage. The study took place at a tertiary care hospital in Eastern India, which handles approximately 7,500 deliveries per year. The study was carried out over a six-month period following ethical approval from the Institutional Ethics Committee.

The study population consisted of low-risk pregnant women attending the antenatal clinic at the tertiary center. These women underwent cervical massage once they reached their expected date of delivery (EDD), as determined by their last menstrual period (LMP) and/or dating scan. Exclusion criteria included: the presence of a growth-restricted foetus for whom induction was planned, twin or higher-order multiple pregnancies, women scheduled for elective lower segment caesarean deliveries, and women who had previously undergone cervical massage or membrane sweep but required formal induction of labour for reasons other than post-dates. Informed consent was obtained from all participants prior to their inclusion in the study.

Basic demographic and clinical information of the study population was recorded antenatally on a datasheet by the clinician performing the cervical massage. The assessment details, including the Bishop score, were recorded and categorized as low (<5), medium (4-5), or high (6+). Discomfort during the cervical massage was documented by the patient using a visual analogue scale (VAS) ranging from 0 to 10, where 0 indicated no pain and 10 represented the maximum possible pain.

A postnatal review was conducted, with information recorded on a standardized datasheet. Measured obstetric outcomes included gestation at labour onset, the time interval (in days) between the most recent cervical massage and labour onset, mode of delivery, and postpartum complications (e.g., NICU admission and length of hospital stay).

Patients were informed at the time of consent that they would be required to fill out a questionnaire after delivery to assess their experience with cervical massage. The postnatal questionnaire, developed by three of the investigators, assessed the patient's prior knowledge of cervical massage, the source of this knowledge, the number of cervical massages performed before labour onset, and the pain experienced during and after the procedure. Additional question included whether the patient would repeat the process in their subsequent pregnancies, and whether they would recommend this procedure to other women.

All data were transferred to a Microsoft Excel worksheet (Office 2021, Windows 10) and analysed using the Statistical Package for the Social Sciences (SPSS) software (version 25).

RESULTS

Two hundred and three pregnant women were screened for eligibility to participate in the study, of whom 61 did not fulfil the inclusion criteria. Of the remaining 142 patients, 38 did not give consent. Thus, 104 women were enrolled in the study, fifty-two primiparas and fifty-two multiparas. The mean age of the study group was 27.78 ± 2.36 years. 88.46% of the study population were aged 25-34 years.

Table 1: Maternal Age, Parity and Body Mass Index of Study Participants

Factors		Frequency (%)
Age (years)	<25	12 (11.54%)
	25-34	92 (88.46%)

Parity	Primipara	52 (50%)
	Multipara	52 (50%)
BMI	Lean (<25)	34 (32.70%)
	Overweight (25<30)	46 (44.23%)
	Obese (>=30)	24 (23.07%)

One hundred and seventy-eight women had cervical massage prior to delivery with 93% (n=160) having a single cervical massage. The comparison between the age, Bishop score, spontaneous onset of labour within 7 days of cervical massage and mode of delivery is shown in Table 2 among primiparas and multiparas.

Table 2: Factors Assessed for the Relationship between Cervical Massage and Spontaneous Onset of Labour (SOL)

Variable	Category	Nulliparous (%) (N=52)	Multiparous (%) (N=52)	Total (N=104)
Age	<25	03 (5.77%)	09 (17.30%)	12 (11.54%)
	25-34	49 (94.23%)	43 (82.70%)	92 (88.46%)
Bishop Score	Low (<4)	36 (69.23%)	38 (73.07%)	74 (71.16%)
	Medium (4-5)	14 (26.92%)	13 (25.00%)	27 (25.96%)
	High (6+)	02 (3.85%)	01 (1.93%)	03 (2.88%)
SOL within 7 days of cervical massage	Yes	10 (19.23%)	17 (32.70%)	27 (25.96%)
	No	42 (80.77%)	35 (67.30%)	77 (74.04%)
Mode of Delivery	VD	31 (59.61%)	41 (78.85%)	72 (69.23%)
	LSCS	21 (40.39%)	11 (21.15%)	32 (30.77%)

Pain score during cervical massage was assessed using Visual Analogue Scale (VAS). Score was 0 (no pain) in 31.73% of women, mild (VAS 1-2) in 50.96%, moderate (VAS 3-6) in 16.35% and severe (VAS 7-9) in 0.96%. No women registered worst possible pain (VAS score 10) with this procedure. Factors assessing patient satisfaction (whether they would agree to repeat the procedure in next pregnancy and recommend the procedure to other women) and pain following procedure are shown among primiparas and multiparas in Table 3.

Table 3: Factors Assessing Patient Satisfaction and Pain Perception

Variable	Category	Nulliparous (%) (N=52)	Multiparous (%) (N=52)	Total (N=104)	p value, chi square	OR (Odd's Ratio)
Pain following procedure	No pain	17 (32.70%)	16 (30.77%)	33 (31.73%)	0.566, 2.031	-
	Mild	24 (46.15%)	29 (55.77%)	53 (50.96%)		
	Moderate	10 (19.23%)	07 (13.46%)	17 (16.35%)		
	Severe	01 (1.92%)	00 (0.00%)	01 (0.96%)		
Repetition of same procedure in next pregnancy	Yes	21 (40.38%)	19 (36.54%)	40 (38.46%)	0.843, 0.039	0.925
	No	31 (59.62%)	33 (63.46%)	64 (61.54%)		
Recommendation to other women	Yes	21 (40.38%)	19 (36.54%)	40 (38.46%)	0.843, 0.039	0.925
	No	31 (59.62%)	33 (63.46%)	64 (61.54%)		

Number of women who underwent vaginal delivery following cervical massage was significantly higher among multiparas (p = 0.034).

Regarding patients' prior knowledge of cervical massage as assessed by the postnatal questionnaire, only 0.96% (n=1) had heard of this through her relative who works in the gynaecology department. 38.46% of the women would agree to undergo the same procedure in their next pregnancy and would recommend the procedure to others.

DISCUSSION

Methods for induction of labour has been extensively researched and studied, however the mechanical methods for induction of labour have not been completely explored as of yet. While there is a definite effect of membrane sweeping on cervical ripening and hence on induction of labour, cervical massage as a method for induction is not very well established. Thus, studies have been conducted which show the pain perception and maternal satisfaction with membrane sweeping, but for women who are not willing to go through the painful process of membrane sweeping, an alternative method in the form of cervical massage can be put forward. Cervical massage is a relatively new concept where the clinician can massage the cervix for 15-30 seconds to help release the hormones promoting labour. As per the NICE (National Institute for Health and Care Excellence) guidelines [3] cervical massage is not specifically listed as a recommended method for cervical ripening but is an area for future research.

We objectively evaluated the interval between cervical massage and labour onset, and the mode of delivery. We also assessed individual patient's experience of cervical massage in terms of discomfort/pain with the help of visual analogue score (VAS), and based on their experience, whether they would agree to repeat the same procedure in their subsequent pregnancies or recommend it to other women. In our study, only 0.96% of women reported severe discomfort (VAS 7–9) and no women reported VAS score of 10 during and after the procedure. Study conducted by Ugezu et al [6], which evaluated postnatal maternal perception and satisfaction with respect to membrane sweeping, showed that 8% of women reported severe discomfort (VAS 8–10) during and after the procedure.

As per the study conducted by TMSSB et al [5] which compared maternal acceptability among women undergoing cervical massage (CM) versus membrane sweeping (MS), maternal acceptability score of CM was significantly higher than that of MS during overall analysis as well as during subgroup analysis according to parity (p=0.0011). In our study, 38.46% would recommend it to others, although only 16.35% experienced moderate discomfort with the procedure. As per the study conducted by Ugezu et al [6], 80% would recommend it to other pregnant women despite 63% of women reporting moderate discomfort with the procedure.

This maybe because, as shown by TMSSB et al [5], although CM is more acceptable than MS and shortened hospital stay for delivery overall, it is not an effective method to ripen the uterine cervix or to prevent formal induction labour regardless of parity. Further studies comparing the effectiveness of membrane sweeping versus cervical massage is needed to come to a definitive conclusion regarding the same.

To our knowledge, our study is the first to assess both the positive and negative opinions of the patients about cervical massage at term in the Indian obstetric population, making this a unique study.

CONCLUSION

Our study shows that only 0.96% of the study population had heard about the process of cervical massage. Although 16.35% women experienced moderate pain, only 38.46% would recommend it to others or agree to repeat the process in their subsequent pregnancies. Our study findings concur with NICE guidelines regarding the fact that although cervical massage can be used as an alternative less-painful procedure compared to membrane sweeping, further research is needed to compare its effectiveness in terms of cervical ripening or induction of labour, before a definitive conclusion can be reached.

Appendix

POSTNATAL QUESTIONNAIRE PATIENTS PERCEPTION OF CERVICAL MASSAGE

Initials_____   Date of Birth _____

Please tick the most appropriate answer:
1. Had you heard of cervical massage before?
   Yes   No

2. If yes, where did you hear about it?

Antenatal clinic   Friends   Internet
Pregnancy books   Relative   Doctor
Other (specify) _____

3. How many membrane sweeps did you have before you delivered your baby?
   1 More than 1   Not sure

4. Use a number from 0-10 to describe the worst amount of pain or discomfort you experienced during the procedure, where 0

represents no pain and 10 represents the worst pain you could imagine

0	1	2	3	4	5
	6	7	8	9	10

5. Would you agree to repeat the same process in your next pregnancy?

    Yes   No

6. Would you recommend cervical massage to other women?

    Yes   No

THANK YOU FOR COMPLETING THIS QUESTIONNAIRE, IT WAS VERY HELPFUL TO GET YOUR OPINION ON CERVICAL MASSAGE

CONTRIBUTION TO AUTHORSHIP
AB wrote the first draft of the paper. AC statistically analyzed the data. AB, AC, RB and SB edited and revised the article, and all the authors approved the final draft.

COMPETING INTERESTS
None declared.

PATIENT CONSENT
Informed consent obtained from all study participants.

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