Journal of Medical & Pharmaceutical Sciences
Volume (6), Issue (4): 30 Sep 2022
P: 77 - 83
ISSN: 2522-333X
مجلة العلوم الطبية والصيدلانية
المجلد (6)، العدد (4): 30 سبتمبر 2022 م
ص: 77 - 83

Induction of labor with unmedical methods via membrane stripping

Marah Abd-Almunim Rayya
Louai Hasan
Essam Aldali
Faculty of Medicine || Tishreen University || Syria

Abstract: Objective: The aims of this study is to determine the efficacy of membrane stripping for induction of labor in women in term and its role in increasing the rate of vaginal delivery.

Collection of samples: Randomized clinical trial was conducted for the period one year (June 2020 –June 2021) at Tishreen University Hospital in Lattakia-Syria. The study included 148 pregnant women in term, and were divided into group (1) included 98 pregnant women who underwent membrane stripping, and group (2) included 50 pregnant women without membrane stripping.

Results: The mean age was26.5±5.5 years, without significant differences between the two groups regarding gestational age, obstetric history, and status of cervix. In membrane stripping group, the rate of spontaneous labor was (81.63%), and the response was higher in women with intermediate cervix (89.4%). The rate of vaginal delivery was (85.7%), with low requirement for labor induction (5.1%). On the other hand, in pregnant women group without membrane stripping, the rate of spontaneous labor was (54%), and the response was higher in women with ripe cervix (77.3%). The rate of vaginal delivery was (58%), with high requirement for labor induction (26%).

Conclusion: Our study findings suggest that membrane stripping represents a safe and effective procedure for induction of labor and reducing the rate of cesarean delivery especially in the case of intermediate cervix.

Keywords: membrane stripping, induction of labor, vaginal delivery

تحريض المخاض بطرق غير دوائية عن طريق تسليخ الأغشية الأمنيوسية

مرح عبد المنعم ريا
لؤي حسن
عصام الدالي
كلية الطب البشري || جامعة تشرين || سوريا

المستخلص: هدفت الدراسة إلى تحديد فعالية تسليخ الأغشية الأمينوسية في تحريض بدء المخاض عند النساء بتمام الحمل ودورها في زيادة معدل الولادة الطبيعية.

طريقة البحث: كانت هذه الدراسة تجربة سريرية عشوائية أجريت في مشفى تشرين الجامعي في اللاذقية-سوريا خلال الفترة الممتدة ما بين حزيران 2020-حزيران2021. شملت الدراسة 148 حامل تم تقسيمهن إلى مجموعتين: مجموعة (1) شملت 98 حامل تم إجراء تسليخ الأغشية الأمنيوسية لديهن، ومجموعة (2) شملت 50 حامل لم يتم إجراء تسليخ الأغشية الأمنيوسية لديهم.

النتائج: بلغ متوسط العمر26.5±5.5، مع عدم وجود فروقات معنوية بين المجموعتين فيما يتعلق بالعمر الحملي، القصة التوليدية، وحالة عنق الرحم. في مجموعة المريضات اللاتي أجري لديهن تسليخ الأغشية الأمنيوسية، بلغ معدل حدوث المخاض العفوي (81.63%)،

وكانت هذه الاستجابة أعلى عند الحوامل مع عنق رحم متوسط النضج (89.4%). بلغت نسبة الولادة الطبيعية (85.7%) مع حاجة منخفضة لتحريض المخاض (5.1%). من جهة أخرى، في مجموعة الحوامل اللاتي لم يتم إجراء تسليخ الأغشية الأمنيوسية لديهن، بلغ معدل حدوث المخاض العفوي (54%)، وكانت هذه الاستجابة أعلى عند الحوامل مع عنق رحم ناضج (77.3%). بلغت نسبة الولادة الطبيعية (58%) مع حاجة عالية لتحريض المخاض (26%).

الاستنتاج: أظهرت الدراسة الحالية أن تسليخ الأغشية الأميتوسية هو إجراء آمن، فعال في تحريض المخاض وإنقاص نسبة الولادات القيصرية خاصة في حالة عنق الرحم متوسط النضج.

الكلمات المفتاحية: تسليخ الأغشية الأمنيوسية، تحريض المخاض، الولادة الطبيعية.

Introduction.

Induction of labor is a critical life-saving intervention that reduces adverse outcomes. It refers to artificial stimulation of uterine contractions to accomplish delivery prior to spontaneous onset [1]. Worldwide, it is a relatively common practice, being required in a quarter of all high risk pregnancies and in one tenth of normal risk pregnancies. The frequency of labor induction in the United States is rising from 9.5% in 1990 to 29.4% in 2019[2].

It is carried out for a number of reasons ranging from medical necessity to convenience. The main indications for labor induction are: prolonged gestation, premature rupture of membranes, fetal growth restriction and maternal health problems such as hypertension, pre-eclampsia and diabetes mellitus [3,4].

Various methods of induction have been used, ranging from chemical to surgical to mechanical. Mechanical interventions include insertion of balloon catheters or less commonly hygroscopic cervical dilators, and pharmacologic agents such as prostaglandins. The choice of methods depends on individual clinical factors, national guidelines and local protocol, as well as advantages and disadvantages of different methods [5]. Despite great efforts to identify an optimal method, up to now no protocol for labor induction has been found to be completely risk-free,

Membrane stripping is a mechanical method, performed by placing a finger into cervical os in a circular movement to separate the inferior portion of membrane from lower uterine segment. The procedure was first reported in 1810 by Hamilton for induction of labor at term [6].

Membrane stripping results in local release of prostaglandins and mechanical dilation of cervix. As a result, it increased rate of spontaneous vaginal delivery, shortens the interval of time to onset of spontaneous labor, and reduce the need for formal induction. Most common complications of membrane stripping are maternal discomfort and clinically insignificant vaginal bleeding [7,8].

The objectives of this review were: 1- to assess the effects and safety of membrane stripping for induction of labor in women at term, 2- to evaluate role of membrane stripping in increasing vaginal delivery.

Collection of samples:

This is a Randomized clinical trial of a group of pregnant women attending department of obstetrics and gynecology at Tishreen University Hospital in Lattakia-Syria during one-year period (June 2020-June 2021). The inclusion criteria were: pregnant women with singleton, cephalic pregnancy, gestation age confirmed by ultrasound as 38-41 week, and Bishop score<4, and with a closed cervix. The exclusion criteria were: - twin pregnancy, breech presentation, congenital malformations, previous cesarean section, and fetal weight >4500 g.

The following data were collected: history and physical examination were performed. Gestational age was measured from the first day of the last menstrual period according to menstrual history and pelvic ultrasonography examination. Women were classified according to the Bishop score which is a pre-labor scoring system to assist in predicting whether induction of labor will be required and depend on (position of cervix, dilation, effacement, station, and cervical consistency) to three groups: ripe cervix (scores ≥9/13), intermediate cervix (5-8 and unripe cervix) (scores≤4) [9]. Women assigned to group1 with membrane stripping and group2 without membrane stripping or any other induction method. Membrane stripping was performed on average two times a week which was conducted by doctors.

Ethical consideration: All patients were provided a complete and clear informed consent after discussion about the study. This study was performed following the Declaration of Helsinki which was developed by the World Medical Association as a statement of ethical principles to provide guidance to physicians in medical research involving human subjects.

Statistical Analysis:

Statistical analysis was performed by using IBM SPSS version20. Basic Descriptive statistics included means, standard deviations (SD), median, Frequency and percentages. To examine the relationships and comparisons between the two group, chi-square test was used or Fisher exact test if it need. All the tests were considered significant at a 5% type I error rate ($p<0.05$), β: 20%, and power of the study: 80%. (World statistics pocketbook,2021)

Results.

A total of 148 pregnant women who admitted to the department of obstetrics and gynecology from June 2020 to June 2021 were included in the study. Ages range from 19 years to 40 years (mean 26.5 ± 5.5 years). Women were divided into two groups: women with membrane stripping (98), and women without membrane stripping (50).

The baseline characteristics of the participants were comparable between groups (Table 1). Maternal baseline characteristics were similar between the two groups in terms of gestational age, obstetric history, and preinduction Bishop score ($p>0.05$). The most frequent gestational age was 39

weeks in the two groups (80.6% vs. 84%, p: 0.4). Women with multiple pregnancies (<5) represented (63.3% in group 1 vs. 76% in group2, p: 0.2), and cervix was intermediate ripe (38.8%) to ripe (51%) in group1 whereas in group2, the cervix was intermediate ripe in (32%) and ripe in (44%), without significant differences.

Table (1) Demographic characteristics of the study population by comparison of the two groups

Variables	Group 1 Women with membrane stripping (n=98)	Group 2 Women without membrane stripping (n=50)	p value
Gestational age (weeks)			
39	79 (80.6%)	42 (84%)	0.4
40	16 (16.3%)	4 (8%)	0.09
>40	3 (3.1%)	4 (8%)	0.1
Obstetric history			
Nulliparous	34 (34.7%)	8 (16%)	0.5
Multiparous			
<5	62 (63.3%)	38 (76%)	0.2
≥5	2 (2%)	4 (8%)	0.8
Status of cervix			
Unripe cervix	10 (10.2%)	12 (24%)	0.07
Intermediate cervix	38 (38.8%)	16 (32%)	0.3
Ripe cervix	50 (51%)	22 (44%)	0.8

Spontaneous labor was occurred in 81.63% of women who underwent membrane stripping. Number of women who went into spontaneous labor varied according to the degree of ripening of the cervix: 80% in unripe cervix, 89.4% in intermediate cervix, and 76% in ripe cervix. The rate of labor induction was 5.1%, higher in women with unripe cervix (10%), Table2.

Table (2) Distribution of pregnant women in membrane stripping group according to the cervix status and the response

Variable	Unripe cervix	Intermediate cervix	Ripe cervix
Spontaneous labor	8 (80%)	34 (89.4%)	38 (76%)
Augmentation of labor	1 (10%)	2 (5.3%)	10 (20%)
Induction of labor	1 (10%)	2 (5.3%)	2 (4%)

Spontaneous labor was occurred in 54% of women who didn't undergo membrane stripping. Number of women who went into spontaneous labor varied according to the degree of ripening of the

cervix: 16.7% in unripe cervix, 50% in intermediate cervix, and 77.3% in ripe cervix. The rate of labor induction was 26%, higher in women with unripe cervix (58.3%), Table 3.

Table (3) Distribution of pregnant women in the group without membrane stripping according to the cervix status and the response

Variable	Unripe cervix	Intermediate cervix	Ripe cervix
Spontaneous labor	2 (16.7%)	8 (50%)	17 (77.3%)
Augmentation of labor	3 (25%)	4 (25%)	3 (13.6%)
Induction of labor	7 (58.3%)	4 (25%)	2 (9.1%)

The number of membrane sweep was associated negatively with cervical status, in which a single procedure was effective in majority of women with ripe cervix, and repeated the procedure is more frequent in unripe and intermediate cervix, Table4.

Table (4) Distribution of pregnant in membrane stripping group according to the cervix status and the number of membrane sweep

Number of membrane sweep	Unripe cervix	Intermediate cervix	Ripe cervix
1	3 (37.5%)	12 (35.3%)	30 (78.9%)
2	5 (62.5%)	22 (64.7%)	8 (21.1%)

The rate of vaginal delivery was higher in women assigned to membrane stripping group (85.7%) vs (58%) in women who didn't, Table5.

Table (5) Distribution of pregnant women according to delivery type in the two groups

Variable	Vaginal delivery	Cesarean delivery
Membrane stripping	84 (85.7%)	14 (14.3%)
Without membrane stripping	29 (58%)	21 (42%)

Discussion.

Induction of labor is an integral component of all maternity practice and is often taken up the interest of fetus and mother. Until now, different methods for labor induction are used with contradictory results regarding the safety and efficacy of the methods.

Our study results on induction of labor by membrane stripping demonstrated the following: there were no statistically significant differences between the two groups regarding gestational age, obstetric history, and status of cervix ($p<0.05$). Pregnant women who underwent membrane stripping had higher rate of spontaneous labor, and the response was more frequent in women with intermediate cervix. The number of membrane sweep was correlated negatively with the degree of cervix ripe. There was a tendency towards more frequent vaginal delivery and the need to the induction of labor was low.

On the other hand, the rates of both spontaneous labor and vaginal delivery in women who didn't undergo membrane stripping were low compared with the previous group, and the need for labor induction was high.

These findings may be explained by follows: membrane sweeping promotes by causing cervix and the lower uterine segment to release endogenous prostaglandins, phospholipase A and oxytocin. In addition to, it increases local production of prostaglandins and prostaglandin metabolites in the maternal circulation [8]. There are number of studies that have investigated the efficacy and safety of membrane stripping in labor induction.

In a study [10] conducted in1992, demonstrated that membrane stripping increased the rate of spontaneous labor (76%) vs. (38%) in women without stripping

Another study[11] showed that membrane stripping was associated with increased the rate of vaginal delivery (69% vs. 56%, p: 0.04).

In addition to that, a study [12] showed that membrane stripping was associated with increased the rate of spontaneous labor (90%) vs. (75%) in women without stripping. In addition to, vaginal delivery was higher (87.5% vs. 83.8%, p: 0.32).

In a study conducted in Syria (2015) [13] also demonstrated in study conducted in Syria that membrane stripping associated with increased the rate of spontaneous labor (79.28%), vaginal delivery (87.85%), with low need for labor induction (6.4%).

In summary, membrane stripping was an effective method for labor induction and can safely be implemented.

References.

1- Fergus, P; McCarthy, L. "Induction of labor. Obstet Gynaecol Reprod Med".24: (1): 7. (2013)
2- Martin,J; Hamilton,B; Osterman,M. "Births: Final Data for 2019.NatlVital Stat Rep".70: 1. (2021)
3- ACOG Practice Bulletin. "Induction of labor. Obstet Gynecol".114: 386-397. (2009)
4- Mozurkewich, E; Chilimigras, J; Berman, D. "Methods of induction of labor: a systematic review: BMC Pregnancy Childbirth".11 (1): 84. (2011)
5- Jozwiak, M; Bloemenkamp, K. "Mechanical methods for induction of labor. Cochrance Database Syst Rev".CD001233. (2012)
6- Boulvain ,M; Stan, C; Irion, O. "Membrane sweeping for induction of labor. Cochrane Database Syst Rev".25 CD000451. (2005)
7- Levine, L; Downes, K; Elovitz ,M."Mechanical and pharmacologic methods of labor induction: A randomized controlled trial". Obstet Gynecol 128: 1357. (2016).

8- Andersen, B; Knudsen, B; Lyndrup, J. "Acupuncture and/or sweeping of the fetal membranes before induction of labor: a prospective, randomized, controlled trial". Journal of Perinatal Medicine.41: 555-560. (2013)

9- Kolkman ,D; Verhoeven, C; Brinkhorst, S. "The Bishop score as a predictor of labor induction success: a systematic review. A m J Perinatol".30: 625. (2013)

10- El –Torkey ,N; Grant ,G. "Sweeping of membrane is an effective method of induction of labor in prolonged pregnancies". J Obestet Gynecol.712-715 (2011).

11- Tan, P; Jacob, R; Omar S. "Membrane sweeping at initiation of formal labor induction". Obstetrics& Gynecology. 107: 569-77. (2006).

12- Zamzami, T; Nawal, S. "The efficacy of membrane sweeping at term and effect on the duration of pregnancy: A randomized controlled trial". J Gynecol & Obstet.3: 30-34. (2013).

13- Ramza, A; Loae, H; Jihad A." Induction of labor with unmedical methods (via membrane stripping):. Tishreen University Journal for Research and Scientific studies.37: 275-292. (2015)