

Is the Membrane Sweeping a Simple, Safe as Well as Effective to Use as a Routine Procedure to Initiate Spontaneous Labor in Term Low-Risk Pregnancy?

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Abstract

Objective: The aim of this study to establish effectiveness of membrane sweeping at 38 weeks of gestation to provoke the labor process to become a part of antenatal assessment and so decrease in the quantity of pregnant ladies reaching 41 completed weeks or need induction of labor.

Design: Design as a prospective observational study Three hundred and sixty-five pregnant participants, who had their antenatal care at obstetric outpatient clinic of zagazig university hospitals, were included within this study who received weekly sweeping of the membranes started at 38 weeks of gestation as a part of protocol designed in our department. The primary outcome measure was the percentage of women who went into spontaneous labor study The time interval between sweeping and delivery, the percentage of prolonged pregnancy (i.e. > 41 completed weeks), Secondary outcome measures were manner of delivery and maternal and fetal outcomes.

Results: The median delivery interval of the allocated patients was 5 days (range 3 - 8 days), 20% delivered > 41 weeks 40% need only one time, 50% need two time sweeping and only 10% need 3 times. The least maternal adverse outcome was maternal infection 0.5% and the most was maternal discomfort in (23%). The neonatal outcome was acceptable with no neonatal mortality. 94% had vaginal deliveries; 60% entered into Spontaneous labour, 30% need augmentation and 10% need induction; 14% of them required aide by vacuum 6% and underwent cesarean delivery.

Conclusion: Sweeping of the membranes weekly from 38 weeks has no evidence of increase the risk of maternal or neonatal adverse outcomes. Also associated with less need to labour induction and is a safe method to reduce the length of low-risk term pregnancy.

Keywords: Membrane Sweeping; Routine; Term Pregnancy; Low Risk; Maternal Complications; Fetal Complications

Introduction

Labor induction is one of the most widespread practices in obstetrics and is approved in about 20% of pregnancies [1]. Sweeping (or stripping) of membranes is defined as digital disconnection of the chorioamniotic membranes from the lower uterine segment [2]. Since 1810 induction of labour by Sweeping of the membranes is an old Practice as James Hamilton recommended it inducing rather than amniotomy, to evade infection [3]. At 1974 Gustavii explained its effectiveness as it help production of prostaglandin from destructive the decidual cells [4].

In 1993 McColgin., *et al.* [5] recognized that sweeping of membrane was associated with an augmented activity of phospholipase A, and the concentrations prostaglandin F. A lot of randomised controlled studies have been performed to assess sweeping of membranes, but the results have been incompatible regarding the effectiveness of this method [6]. A latest meta-analysis of sweeping of membrane trials accomplished that even though it decreases the number of females moving ahead to postdate gestation and decrease the requirement of official labor induction, the routine use of sweeping of membranes from 38 weeks pregnancy onwards does not appear to construct clinically significant reimbursements [7].

Aim of the Study

The aim of this study was to assess the effectiveness of membrane sweeping to use it as routine practice for Initiating labor in low-risk patients at term pregnancy starting from 38 to 40 gestational weeks and if it reduces the number of women reaching 41 weeks.

Materials and Methods

A prospective observational study was conducted on Three hundred and sixty-five pregnant women \geq 38 weeks gestational age between July 2017 and October 2018 zagazig university Hospitals. Written informed consent was obtained from all women who entered the study to participate in the study after the hospital ethics committee approved the study. Membrane sweeping was recommended in low risk pregnancy near term in our institution. In our hospital, the inclusion criteria were: a single viable Fetus, cephalic presentation, gestational age 38 to 40 weeks as detected by the last menstrual period or by a first trimester ultrasound scan, no previous uterine surgery except single cesarean section 2 or more 3 years ago, no detected risk factors, and no contraindication to vaginal birth. After lubrication of Clean gloves with chlorhexidine cream, the process was carried out by unraveling the lower membrane to the degree that possible from its cervical attachment, by passing the examining forefinger and middle finger three time for approximately 30s through 360 degrees with circular pushing and massaging movements circumferentially was performed at every visit, If the cervix closed It was drawn out digitally and was strongly massaged till membrane sweeping could be performed [8]. Sweeping and vaginal examination were performed by only one of the examiners. Those ladies were kept under observation for a few hours and, if they were sound, the discharge was allowed for them. They were counseled to anticipate a ‘show’ (spotting or blood-stained cervical mucus) and advised to follow up the fetal movements with marking a chart. Also, were instructed to be admitted to the labor ward if felt reduced fetal movement, gush of water, too much vaginal bleeding or supposed the beginning of labor. Each participant was provided by a cut-off date to induce the labor if spontaneous onset did not happen. Subsequently, the follow up was weekly for all in anticipation of delivery or programmed induction and sweeping was repeated every week if no evidence of improvement. Induction of labour was started if patient reached to 41 weeks. The outcomes of the study were the percentage of women who came into spontaneous labor before 41 weeks’ gestation, time interval between the sweeping and delivery, mode of delivery, incidence of premature rupture of membranes (PROM), maternal complication and neonatal outcome. Data were analyzed and tabulated. The mean and standard deviation were used to represent the results when a variable was normally distributed, or else results were exposed as median and interquartile range, unqualified variables were conveyed as numbers and percentages. Quantitative variables were expressed as mean \pm SD Unpaired Student’s t-test; was used when a variable was not distributed normally, the Mann-Whitney U-test was used. All data were analyzed using SPSS version 17.0 (SPSS Inc., Chicago, IL, USA).

Results

The residents of study were consisted of 365 women, 5 of them were missed as they did not come back to the hospital after allocation. Ten patient did not complete the study as they to deliver immediately as result of decrease amniotic fluid, decrease fetal movements, breech presentation. 50 patients had an inaccessible cervix so cervical massage was done to them (Figure 1). So, The entire of 350 women counting 160 nullipara and 140 multiparous women accomplished the study. The median age of the patients 23 (range: 21 - 29 years).

| Variable | Number (300) |
|---|------------------|
| Maternal age (year, median) | 23 (21 - 29) |
| Gestational age at enrollment | 38 (38.3 - 39.9) |
| Body mass index (mean + SD) | 25.05 \pm 0.90 |
| Nullipara (n, %) | 160, 53.3% |
| Multipara (n, %) | 140, 46.6% |
| Bishop score at recruitment (mean + SD) | 3.50 \pm 1.5 |

Table 1: Demographic characters of the studied cases.

Values are given as n (%) or mean [SD].or median with (range).

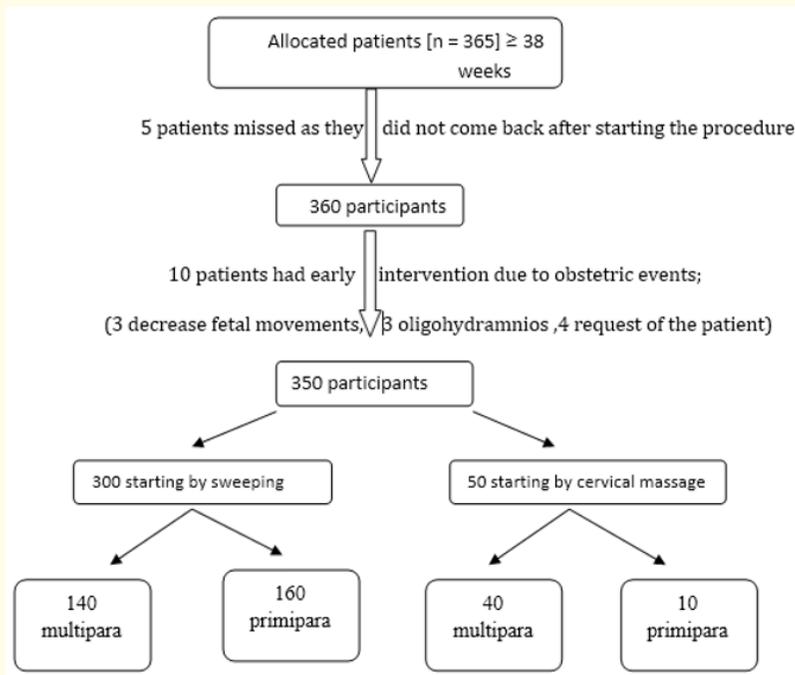


Figure 1: Flow diagram of the studied cases.

The median delivery interval was 5 days (range 3 - 8 days), 20% delivered > 41 weeks 40% need only one time, 50% need two time sweeping and only 10% need 3 times (Table 2).

| Variable | Number (300) | Percentage % |
|---------------------------------|--------------|--------------|
| Sweeping-delivery interval (ds) | 5 (3 - 8) | |
| Deliveries > 41 weeks | 60 | 20% |
| Number of sweeping | | |
| Only one time | 120 | 40% |
| Two times | 150 | 50% |
| Three time | 30 | 10% |

Table 2: Pregnancy outcomes.

Adverse outcomes relayed to sweeping were: Premature rupture of membranes in 10%, Vaginal bleeding (18%), Maternal infection 0.6%, Meconium-stained amniotic fluid 6%, Abnormal FHR pattern (3%) and Maternal discomfort in (23%) (Table 3).

| Variable | Number (300) | Percentage % |
|---|--------------|--------------|
| Premature rupture of membranes (n, %)* | 30 | 10% |
| Vaginal bleeding | 54 | 18% |
| Maternal infection (n, %)* | 2 | 0.6% |
| Meconium-stained amniotic fluid (n, %)* | 18 | 6% |
| Abnormal FHR pattern | 9 | 3% |
| Maternal discomfort | 69 | 23% |

Table 3: Adverse effects.

The mean of birth weight (g) 3300 ± 364 , the Apgar score < 7 at 5 minutes in (3%) the percentage of infants admitted to the neonatal intensive care unit (2%) and no cases of Neonatal mortality (Table 4). 94% had vaginal deliveries; 60% entered into Spontaneous labour, 30% need augmentation and 10% need induction; 14% of them required aide by vacuum 6% and underwent cesarean delivery (Table 5).

| Mode | Number (300) | Percentage % |
|-------------------|--------------|--------------|
| Spontaneous | 180 | 60% |
| Augmented | 90 | 30% |
| Induced | 30 | 10% |
| Instrumental | 42 | 14% |
| vaginal | 282 | 94% |
| Caesarean section | 18 | 6% |

Table 5: Mode of delivery.

Discussion

Membrane Sweeping is an old and easy process to encourage spontaneous inception of labor, it diminishes the incidence of post-date pregnancy and decreases the requirement of the official scheme of induction of labor. This study was achieved to appraise the consequences of sweeping membrane in term low-risk pregnancy (38 - 40 weeks) of gestation. The main result was increase in percentage of spontaneous onset of labor and a significant decrease in days to delivery. There was statistically significant decline percentage of pregnancies precedent to 41 weeks, unlike the meta-analysis of Boulvain., *et al.* 2005 who concluded that Routine use of sweeping of membranes from 38 weeks of pregnancy onwards does not seem to produce clinically important benefits. When used as a means for induction of labour, the reduction in the use of more formal methods of induction needs to be balanced against women's discomfort and other adverse effects [7]. A meta-analysis of 22 randomised controlled trials assessed the consequence of membrane sweeping on pregnant women (37 - 40 weeks' gestation) [9] found decreased the hazard of post-date pregnancy and the need labor induction. This in agree with our results as 20% only of our cases passed 41 weeks of gestation and 10% only need induction. However, they did not recommend the routine use of sweeping of membranes from 38 weeks of pregnancy onwards. Miranda E., *et al.* found that there was reduction between the Sweeping and delivery by 4 days that in close association with our result as we found it was 5 days [10]. In current study, we performed sweeping of membranes as soon as 38 weeks gestation in trial to avoid extended pregnancy and we found that it was successful. But some studies showed no effectiveness when it was done between the 38th and 40th gestational weeks to induce labor at term [11]. About adverse effects of the sweeping of membranes in this study, the results were incomparable to the results of other studies as, the percentage of premature ruptured membranes (10%), vaginal bleeding (18%) and maternal infection (0.5%), Meconium-stained amniotic fluid (6%), Abnormal FHR pattern (3%), even patient discomfort during the procedure was 23% [9].

Wong., *et al.* accomplished that sweeping is a secure procedure in terms with little risk of PROM; vaginal bleeding, however, is related to significant maternal discomfort rates [12].

The safety of sweeping of membrane has been established in nearly all the studies like (Berghella., *et al.* 1996 and Magnann., *et al.* 1998). Who used it in the form of either single or serial procedures from 38 weeks onwards to avoid the pregnancy to be lengthened [13,14].

Also, its effectiveness has been established in numerous studies since 1958 in the study of Swann, Weissberg and Spellacy in 1977, El Turkey and Grant., *et al.* 1992, Berghella., *et al.* 1996 until Sabita 2015 with 44 - 89% spontaneous onset of labor and 2.1% only post-date pregnancy, the results which were near to our results [15].

Conclusion

Sweeping of membranes even if serial is a simple, safe and effective procedure for initiating the spontaneous labor and reducing the incidence of prolonged gestation in term low risk pregnancy With no maternal or neonatal adverse outcomes that could be applied universally.

Bibliography

1. RCOG (Royal College of Obstetricians and Gynaecologists) induction of labour. In: Evidence-based clinical guideline number 9. London: RCOG Clinical Support Unit (2008): 59-62.
2. Keirse MJ, *et al.* "Chronic stimulation of uterine prostaglandin synthesis during cervical ripening before the onset of labor". *Prostaglandins* 25.5 (1983): 671-682.
3. Thiery M, *et al.* "The development of methods for inducing labour". In: Chalmers 1, Enkin M, Keirse MMC, editors. *Effective Care in Pregnancy and Childbirth* Oxford. University Press (1989): 969-980.
4. Gustavii B. "Sweeping of the fetal membranes by a physiologic saline solution: effect on decidual cells". *American Journal of Obstetrics and Gynecology* 120.4 (1974): 531-536.
5. McColgin SW, *et al.* "Parturitional factors associated with membrane stripping". *American Journal of Obstetrics and Gynecology* 169.1 (1993): 71-77.
6. Allott HA and Palmer CR. "Sweeping the membranes: a valid procedure in stimulating the onset of labour?" *British Journal of Obstetrics and Gynaecology* 100.10 (1993): 898-903.
7. Bouvain M, *et al.* "Membrane sweeping for induction of labour". *Cochrane Database of Systematic Reviews* 1 (2005): CD000451.
8. El-Torkey M and Grant JM. "Sweeping of the membranes is an effective method of induction of labour in prolonged pregnancy: a report of a randomized trial". *British Journal of Obstetrics and Gynaecology* 99.6 (1992): 455-458.
9. Gokhan Yildirim, *et al.* "Membrane sweeping to induce labor in low-risk patients at term pregnancy: A randomised controlled trial". *The Journal of Maternal-Fetal and Neonatal Medicine* 23.7 (2009): 681-687.
10. de Miranda E, *et al.* "Membrane sweeping and prevention of post-term pregnancy in low-risk pregnancies: a randomized controlled trial". *BJOG: An International Journal of Obstetrics and Gynaecology* 113.4 (2006): 402-408.
11. Kashanian M, *et al.* "Effect of membrane sweeping at term pregnancy on duration of pregnancy and labor induction: a randomized trial". *Gynecologic and Obstetric Investigation* 62.1 (2006): 41-44.
12. Wong SF, *et al.* "Does sweeping of membranes beyond 40 weeks reduce the need for formal induction of labour?" *BJOG: An International Journal of Obstetrics and Gynaecology* 109.6 (2002): 632-636.
13. Berghella V, *et al.* "Stripping of membranes as a safe method to reduce prolonged pregnancies". *Obstetrics and Gynaecology* 87.6 (1996): 927-931.
14. Magann EF, *et al.* "Can we decrease postdatism in women with an unfavourable cervix and a negative fetal fi bronectin test result at term by serial membrane sweeping?" *American Journal of Obstetrics and Gynecology* 179.4 (1998): 890-894.
15. Sabita Saichandran, *et al.* "Efficacy and safety of serial membrane sweeping to prevent post term pregnancy: a randomised study". *International Journal of Reproduction, Contraception, Obstetrics and Gynecology* 4.6 (2015): 1882-1886.

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