

# Comparison Between Expectant Management and Sweeping of Membranes for Spontaneous Onset of Labour and Subsequent Mode of Delivery

Farkhanda Saeed<sup>1</sup>, Sarah Ejaz Abbasi<sup>2</sup>, Naheed Bano<sup>3</sup>, Sadia Khan<sup>4</sup>, Kiran Jabeen<sup>5</sup>, Faiza Faraz<sup>6</sup>

<sup>1,2,6</sup>Senior Registrar, Obs & Gynae, Gynae Unit-I, Holy Family Hospital Rawalpindi

<sup>3</sup>Professor Nust School of Health Sciences, Rawalpindi, <sup>4</sup>Associate Professor/ Obs and Gynae RMU

<sup>5</sup>Post Graduate Resident Obs & Gynae, Gynae Unit-I, Holy Family Hospital Rawalpindi

**Correspondence:** Dr. Sarah Ejaz Abbasi  
Senior Registrar Obs & Gynae, Gynae Unit-I,  
Holy Family Hospital Rawalpindi  
sarahejazabbassi@hotmail.com

## Abstract

**Objective:** To compare the frequency of spontaneous onset of labor and vaginal delivery in postdate primigravida undergoing sweeping of membrane with those having expectant management.

**Methodology:** The study was a randomized controlled trial conducted in Obstetrics and Gynecology Unit-I, Holy Family Hospital, Rawalpindi from July 2020 to Dec 2020. In Group A patients after 40 weeks of gestation were managed conservatively till 41 weeks, in Group B membrane sweeping was done every 48 hours (3 times on alternate days) till 41 weeks of gestation. Then women in both groups were followed up and the onset of labour was assessed in each group along with the mode of delivery. All the data was entered and analyzed using SPSS Version 22.0. Post-stratification, the Pearson chi-square test was applied.

**Results:** We recorded that the frequency of onset of labour was recorded in 69.41%(n=59) in Group-A and 87.06%(n=74) in Group-B, p-value was calculated as 0.005. Regarding mode of delivery shows that 80%(n=68) in Group-A and 83.53%(n=71) in Group B whereas 20%(n=17) in Group-A and 16.47%(n=14) in Group B had cesarean section, p-value was calculated as 0.55.

**Conclusion:** Sweeping of the membrane significantly gives a better outcome when compared to the expectant management for post-date primigravida.

**Keywords:** Primigravida, Membrane sweeping, labour.

Cite this article as: Saeed F, Abbasi SE, Bano N, Khan S, Jabeen K, Faraz F. Comparison Between Expectant Management and Sweeping of Membranes for Spontaneous Onset of Labour and Subsequent Mode of Delivery. J Soc Obstet Gynaecol Pak. 2023; 13(4):355-359.

## Introduction

Membrane sweeping is an established method of promoting the onset of labour without a hospital admission and is regularly applied to prevent pregnancies from extending beyond term.

Prolonged pregnancy or late-term pregnancy is defined as pregnancy beyond 41 completed weeks of gestation<sup>1</sup> and is considered one of the most common indications for induction of labour<sup>2</sup> as there is a significant increase in perinatal morbidity and mortality with increasing gestation after completed 40 weeks. The prevalence of post-term pregnancy in a population is affected by several factors. One of the most important factors is whether a routine early ultrasound assessment of

gestational age is performed. Among pregnancies dated by first-trimester ultrasound examination, the prevalence of delivery  $\geq 42$  weeks is about 2 percent (versus 6 to 12 percent by the last menstrual period [LMP])<sup>3,4</sup> and the prevalence of delivery  $\geq 41$  weeks' ranges from 5 to 11 percent (versus 13 to 22 percent by LMP). The possibility of preventing intrauterine fetal morbidity and mortality of known or unknown causes and the possibility of applying intrapartum fetal surveillance and monitoring from the beginning of labor are put forward as arguments in favor of induction of labor. Different methods adapted for induction of labour include membrane sweeping, intracervical foleys, prostaglandins administration, and amniotomy<sup>5</sup>. Among these sweeping of membranes is

Authorship Contribution: <sup>1-3</sup>Substantial contributions to the conception or design of the work, acquisition, analysis, or interpretation of data for the work, <sup>4-5</sup>Drafting the work or revising it critically for important intellectual content, <sup>3</sup>Final approval of the version to be published.

Funding Source: none

Conflict of Interest: none

Received: May 05, 2022

Accepted: Oct 18, 2023

the only known pharmacological and non-surgical method of induction. This involves the digital separation of fetal membranes from the lower uterine segment through the cervical os<sup>2</sup>. Stripping membranes, sometimes called membrane sweeping, is a method used to try to start labor by health care provider by putting her or his finger into the cervix - the mouth of the uterus -- and using the finger to gently separate the bag of water from the side of the uterus near the cervix. It is easily done in the office during a regular pelvic exam. So the purpose of this study is to determine the effect of membranes sweeping on the duration of pregnancy and spontaneous onset of labour in prolonged pregnancies along with the mode of delivery. A very limited number of comparative studies has been done in this regard in our region of the world, therefore this study, on the one hand, can establish facts to reduce the need for induction of labour by increasing the spontaneous onset of labour as well as indirectly by reducing the frequency for lower segment cesarean sections which may otherwise be higher in case of prolonged pregnancies or induction of labour with other methods.

Sweeping of membranes increases local prostaglandins secretion, which in turn increases cervical favorability and improves bishop score<sup>6</sup> hence increasing the chances of spontaneous onset of labour and reducing the need for induction of labour. Furthermore, the spontaneous onset of labour also reduces the need for lower-segment transverse cesarean. Some studies show the spontaneous onset of labour within 7 days with membrane sweeping 74.3% as compared to expectant management 45.7% and show no difference in the mode of delivery i-e vaginal delivery in patients with membrane sweeping 95.7% compared to patient managed expectantly 84.3%.<sup>5</sup> However, another study shows the difference in the onset of labour in patients managed with membrane sweeping is 90% compared to patients managed expectantly i-e 75% and the rate of vaginal delivery in patients managed with membrane sweeping is 87.5% compared to patients managed expectantly i-e 83.8%<sup>8</sup>.

Recent studies have shown that the risks to the fetus<sup>9,10,11</sup> and to the mother-of continuing the pregnancy beyond the estimated date of delivery are greater than originally appreciated. Chhetri et al.,<sup>12</sup> found a twofold increase in "fetal distress" at 42 weeks with an increase in operative deliveries and surmised that 42 weeks constituted a significant risk to the fetus and proposed intervening with induction of labor or cesarean delivery to avoid the risk of fetal death. Early studies were likely

fraught with inaccurate dating and inconsistent definitions of post-term pregnancy. More recent observational studies that have evaluated the risk of perinatal mortality at each gestational week show an increased risk as gestational age advances beyond the EDD. Gandotra and associates<sup>13</sup> highlighted that the incidence of post-term pregnancy was found to be 6.23.46% were spontaneous vaginal deliveries, 30% were induced deliveries. Many studies have used perinatal mortality rate (PMR), which has been suggested by Lkhagvasuren<sup>14</sup> and others to be an inappropriate assessment of risk to the fetus. Research<sup>15,16</sup> has shown that, compared with term pregnancies, post-term pregnancies have a twofold increase in the risk for macrosomia; and in these pregnancies, macrosomia was associated with a greater risk of operative delivery and shoulder dystocia leading to fetal injury. None of these studies conducted on membrane sweep demonstrated any increase in either maternal or neonatal adverse outcomes.<sup>17</sup>

One study showed its efficacy on labor and delivery outcome, but this was limited to nulliparous who had unfavorable cervix.<sup>18</sup> Induction of labour has been proposed by sweeping the membranes instead of amniotomy, in order to avoid infection.<sup>19</sup> However, it was not until the 1950s that sweeping of the membranes became the subject of scientific research. Rayya et al.,<sup>20</sup> reported that it was effective in women with a favorable cervix, as sweeping of the fetal membranes stimulated prostaglandin production<sup>21</sup> by damaging the decidual cells. Ingalgeri<sup>22</sup> found that membrane sweeping was associated with an increase in both phospholipase A2 activity and prostaglandin F2 concentrations. National Institute for Health and Clinical Excellence (NICE) recommends the routine use of the procedure at 40+ week's gestation before attempting formal induction. Membrane sweeping is not associated with an increase in maternal or neonatal infection,<sup>23</sup> or pre-labor rupture of membranes.<sup>24,25</sup> Although some women report discomfort during the procedure, vaginal blood loss, and painful contractions in the 24-hour period post-procedure. Since membrane sweeping may not result in the onset of labour, Shams and Nasreen<sup>24</sup> argue that the possible benefits in terms of a reduction in more formal induction methods need to be weighed against these known issues.

The objective of the study was to compare the frequency of spontaneous onset of labour and vaginal delivery in postdate primigravida undergoing sweeping of membrane with those having expectant management.

## Methodology

A Randomized controlled trial was performed at Obstetrics and Gynecology Unit-I, Holy Family Hospital, Rawalpindi after obtaining permission from the Institutional Research Forum of Rawalpindi Medical College. Consecutive (non-probability) sampling was conducted on primigravidas with uncomplicated singleton pregnancy between 20 to 35 years of age among women at 40 completed weeks of gestation confirmed by dates and early scan

Scarred uterus, multiple gestations, patients with any absolute contraindication to vaginal delivery (i.e. transverse/ oblique lie previous 2 or more LSCS, placenta Previa), Ruptured membranes, and patients with no contraindication to SVD were all excluded from the study.

The women fulfilling the selection criteria were provided with necessary information on the purpose and procedure of the study, and informed written consent was taken the addresses and phone numbers of all study participants were noted. In Group A patients after 40 weeks of gestation were managed conservatively till 41 weeks, in Group B membrane sweeping was done every 48 hours (3 times on alternate days) till 41 weeks of gestation. Then women in both groups were followed up and the onset of labour was assessed in each group along with the mode of delivery.

All the data was entered and analyzed using SPSS Version 22.0. All the continuous variables like patient's age and gestational age were presented as mean and standard deviation. For all the categorized variables e.g. onset of labor, mode of delivery, and number of times sweeping of membranes frequencies along with percentages were calculated. The variables like age and gestational age were controlled by stratification. Post-stratification, the Pearson chi-square test was applied.

## Results

A total of 170 cases fulfilling the inclusion/exclusion criteria were enrolled to compare the frequency of spontaneous onset of labour and vaginal delivery in postdate primigravida undergoing sweeping of membrane with those having expectant management.

The age distribution of the patients in Group A was a mean of 28.96+4.15, whereas the mean age in Group B was 29.2+3.96. Mean gestational age in Group A was 40.55+0.50 and in Group B was 40.58+0.49. Similarly,

the percentage frequency of onset of labour was 69.41% in Group A whereas it was 87.06% in Group B.

Frequency of the mode of delivery in both Groups are given in table I. This shows that there was an increase of 3.53% in patients for vaginal delivery after membrane sweeping. Moreover, the stratification of the onset of labour with age, and gestational age along with stratification of the mode of delivery with age and gestational age is given in table, III, IV, V.

**Table I: Frequency of Mode of Delivery.**

Mode of delivery	Group-A (n=85)		Group-B (n=85)	
	N	%	N	%
Vaginal delivery	68	80	71	83.53
Cesarean section	17	20	14	16.47
<b>Total</b>	<b>85</b>	<b>100</b>	<b>85</b>	<b>100</b>

**Table II: Stratification for Onset of Labour with Age**

Group	Onset of Labour		P value
	Yes	No	
Age: 20-30 years			
A	33	14	0.19
B	36	8	
Age: 31-35 years			
A	26	12	0.006
B	38	3	

**Table III: Stratification for Mode of Delivery with 20-30 Years.**

group	Mode of Delivery		P value
	cesarean section	vaginal delivery	
a	9	38	0.68
b	7	37	
Age: 31-35 years			
a	8	30	0.65
b	7	34	

**Table No. IV: Stratification for Onset of Labour with Regards to Gestational Age: 40-40+6 weeks.**

Group	Onset of Labour		P value
	Yes	No	
A	29	9	0.45
B	30	6	
Age: 41 weeks			
A	30	17	0.002
B	44	5	

## Discussion

Post-term pregnancy is associated with increased perinatal morbidity and mortality and it is the most common indication of induction of labour. The incidence of post-term pregnancy ranges from 4-18%. Membrane sweeping involves the **digital separation of fetal**

**Table V: Stratification for Mode of Delivery with Gestational Age 40-40+6 weeks.**

Group	Mode Of Delivery		P value
	Cesarean section	Vaginal delivery	
A	7	31	0.59
B	5	31	
Age: 41 weeks			
A	10	37	0.72
B	9	40	

membranes from the lower segment of the uterus. It is an established method of promoting the onset of labour without a hospital admission and is regularly applied to prevent pregnancies extending beyond term.

The reason for conducting this study was to determine the effect of membranes sweeping on the duration of pregnancy and spontaneous onset of labour in prolonged pregnancies along with the mode of delivery. As a minimal number of comparative studies has been done in this regard in our region of the world, therefore this study, on the one hand, can establish facts to reduce the need for induction of labour by increasing the spontaneous onset of labour as well as indirectly by reducing the frequency for lower segment cesarean sections which may otherwise be higher in case of prolonged pregnancies or induction of labour with other methods.

In comparison, we recorded that the frequency of onset of labour was recorded in 69.41%(n=59) in Group A and 87.06%(n=74) in Group B, the p-value was calculated as 0.005. Regarding mode of delivery shows that 80%(n=68) in Group A and 83.53%(n=71) in Group B whereas 20%(n=17) in Group A and 16.47%(n=14) in Group B had a cesarean section, p-value was calculated as 0.55.

Previous studies reveal that spontaneous onset of labour within 7 days with membrane sweeping at 74.3% as compared to expectant management at 45.7% ( $p < .0001$ ), and shows no difference in the mode of delivery i.e vaginal delivery in patients with membrane sweeping 95.7% compared to patient managed expectantly 84.3% ( $p < .0001$ )<sup>5</sup>.

However, another study shows the difference in the onset of labour in patients managed with membrane sweeping 90% compared to patients managed expectantly i.e 75% ( $p = 0.01$ ). The rate of vaginal delivery in patients managed with membrane sweeping is 87.5% compared to patients managed expectantly i.e 83.8% ( $p = 0.326$ )<sup>8</sup>. Our findings are in agreement with this study.

One more previous study shows that 37 of the 40 (92.5%) women undergoing membrane sweeping delivered spontaneously before completion of 41 weeks of gestation<sup>26</sup>. Another local study<sup>27</sup> recorded these findings in 38 of the 50 (76%) women, while another local study<sup>28</sup> recorded these findings in 83% of the cases and the study was conducted on 30 women, which shows a significant difference between the three studies. It has been shown that membrane sweeping done frequently did not influence the likelihood of delivery at 41 weeks of pregnancy.<sup>29</sup>

Limitations and Future Research: The research has a small sample size as it was conducted in one hospital only. Furthermore, only tertiary care hospital setting was focused which does not provide us with comparative results. A multicenter randomized clinical control trial with a larger sample size and multiple variables including medication can be implied for future studies.

## Conclusion

Sweeping of the membranes is safe, relatively noninvasive, and improves unfavorable cervix at term, but has less predictable results than other methods of labor induction. Sweeping of the membrane significantly gives a better outcome when compared to the expectant management for post-date primigravida.

## References

1. Lesvenan C, Simoni M, Olivier M, Winer N, Banaszkiwicz N, Collin R, Coutin AS, et al. Prolonged and post-term pregnancies: a regional survey of French clinical practices. *Gynecologie, Obstetrique, Fertilité & Senologie*. 2021 Feb 25;49(7-8):580-6.
2. Coates D, Homer C, Wilson A, Deady L, Mason E, Foureur M, Henry A. Induction of labour indications and timing: A systematic analysis of clinical guidelines. *Women and Birth*. 2020 May 1;33(3):219-30.
3. Keulen JK, Bruinsma A, Kortekaas JC, Van Dillen J, Bossuyt PM, Oudijk MA, Duijnhoven RG, et al. Induction of labour at 41 weeks versus expectant management until 42 weeks (INDEX): multicentre, randomised non-inferiority trial. *bmj*. 2019 Feb 20;364.
4. Aris IM, Kleinman KP, Belfort MB, Kaimal A, Oken E. A 2017 US reference for singleton birth weight percentiles using obstetric estimates of gestation. *Pediatrics*. 2019 Jul 1;144(1).
5. Emarah MS. Stripping membranes in the induction of labor. *International Journal of Recent Advances in Multidisciplinary Research*. 2015;2(10): 875-8
6. Osmundson SS, Ou-yang RJ. Elective induction compared with expectant management in nulliparous women with a favorable cervix. *Obstet Gynecol*. 2010; 116:601-5.

7. Saichandran S, Arun A. Efficacy and safety of serial membrane sweeping to prevent post term pregnancy: a randomized study. *Int J Reprod Contracept Obstet Gynecol.* 2015;4:1882-6.
8. Zamzami TY. The Efficacy of Membrane Sweeping at Term and Effect on the Duration of Pregnancy: A Randomized Controlled Trial. *J Clin Gynecol Obstet.* 2014;3: 30-4.
9. Caughey AB, Nicholson JM, Washington AE. First- vs second-trimester ultrasound: the effect on pregnancy dating and perinatal outcomes. *Am J Obstet Gynecol* 2008; 198:703. e1.
10. Oberg AS, Frisell T, Svensson AC, Iliadou AN. Maternal and fetal genetic contributions to postterm birth: familial clustering in a population-based sample of 475,429 Swedish births. *Am J Epidemiol* 2013; 177:531.
11. Maoz O, Wainstock T, Sheiner E, Walfisch A. Immediate perinatal outcomes of postterm deliveries. *The Journal of Maternal-Fetal & Neonatal Medicine.* 2019 Jun 3;32(11):1847-52.
12. Chhetri PB, Shrestha BK, Shrestha S, Pathak P, Shrestha R, Acharya M. Maternal and fetal outcome in pregnancy beyond the expected date of delivery in a tertiary care hospital of Nepal. *Journal of Chitwan Medical College.* 2022 Jun 30;12(2):47-50.
13. Gandotra N, Sharma P, Sharma A. Maternofetal outcome of post-term pregnancy: A retrospective analysis. *JK Practitioner.* 2021 Jul 1;26(3).
14. Lkhagvasuren N, Enkh-Amgalan B, Bayar K, Bandi M, Badarch J. Prevalence, risk factors and outcomes of labor induction among women delivered at Maternity Hospitals of Mongolia. In *Proceedings of the 6th International Conference on Medical and Health Informatics 2022:* 295-299).
15. Agudelo-Espitia V, Parra-Sosa BE, Restrepo-Mesa SL. Factors associated with fetal macrosomia. *Revista de saude publica.* 2019 Dec 2;53.
16. Fang F, Zhang QY, Zhang J, Lei XP, Luo ZC, Cheng HD. Risk factors for recurrent macrosomia and child outcomes. *World Journal of Pediatrics.* 2019 Jun 1; 15:289-96.
17. Yildirim G, Güngördük K, Karadağa O, Aslana H, Turhana E, Ceylana Y. Membrane sweeping to induce labor in low-risk patients at term pregnancy: A randomised controlled trial. *J Mat-Fet- Neonat-Med.* 2010;23(7):681-87.
18. Al-Harmiab J, Chibberab R, Foudab M, Mohammed Z, El-Salehab E, Tasneem A. Is membrane sweeping beneficial at the initiation of labor induction? *J Mat-Fet- Neonat-Med.* 2015;28(10):1214-18.
19. Levine LD. Cervical ripening: Why we do what we do. *In Seminars in perinatology* 2020;(44)2: 151216). WB Saunders.
20. Rayya MA, Hasan L, Aldali E. Induction of labor with unmedical methods via membrane stripping. *Journal of Medical & Pharmaceutical Sciences.* 2022 Sep 1;6(4).
21. Finucane EM, Murphy DJ, Biesty LM, Gyte GM, Cotter AM, Ryan EM, Bouvain M, Devane D. Membrane sweeping for induction of labour. *Cochrane Database of Systematic Reviews.* 2020(2).
22. Ingalgeri SB. *Effect of Sweeping of Membranes at Initiation of Formal Induction of Labour—A Randomised Controlled Trial* (Doctoral dissertation, Rajiv Gandhi University of Health Sciences (India)).
23. National Institute for Health and Clinical Excellence. Induction of labour. London. See: <http://www.nice.org.uk/nicemedia/live/12012/41256/41256.pdf> (accessed 22 January 2012)
24. Shams R, Nasreen A. Membrane sweep and stretch at term pregnancy: preventing prolonged pregnancy. *Advances in Basic Medical Sciences.* 2019 Sep 28;3(1).
25. Avdiyovski H, Haith-Cooper M, Scally A. Membrane sweeping at term to promote spontaneous labour and reduce the likelihood of a formal induction of labour for postmaturity: a systematic review and meta-analysis. *Journal of Obstetrics and Gynaecology.* 2019 Jan 2;39(1):54-62.
26. Ibrahim ZM, Saraya MH, El-Nahas KM, Said ME. Membrane sweeping for prevention of post-Maturity in Low-Risk Term Pregnancies. *Med J Cairo* 2012;80(1):31-135
27. Mehmood H, Bashir A. Does sweeping of membranes in nulliparous women reduce the need for formal induction of labor? *Ann King Edward Med Uni* 2005;11(4):452-4.
28. Tufail S, Batool T. Membrane sweeping at term for prevention of postdate pregnancy. *JSOGP* 2011; 4:232-8.
29. Putnam K, Magann F, Doherty A, Poole T, Magann I, Warner B, Chauhan P. Randomized clinical trial evaluating the frequency of membrane sweeping with an unfavorable cervix at 39 weeks. *Int J Womens Health.* 2011; 3:287-94.