Research Article

The Effectiveness of Membrane Sweeping at Term and Clinical Effects on Duration of Pregnancy

Ayesha Ali[1], Sofia Iqbal[2], Tabassum Rashid[3]

[1]Clinical Fellow Fetal Medicine,The Princess Alexandra Hospital, Harlow, UK; [2]Assistant Professor, FJMU/ Sir Ganga Ram Hospital, Lahore; [3]District Gynaecologist, THQ Hospital, Narrowal.

Abstract

Background

The causes of post-dates births are unknown, but they are more likely when a woman has experienced a previous post-dates birth. She can be at an increased risk for vaginal trauma and Caesarean section in a post-term pregnancy due to the size of the baby.

Objective:

We conducted this study to find the effectiveness of sweeping of membranes in term pregnancy to avert post-term pregnancy.

Methods

A comparative cross sectional study was carried out in tertiary care hospital, Lahore, Paksitan.

Results

Total 120 patients who underwent stretch and sweep of membranes required less traditional induction of labour. About 106 patients went into spontaneous labor and effectiveness was found 88.3%. No significant side effects of sweeping of membranes including heavy bleeding and leaking of amniotic fluid were noted. Only discomfort associated with vaginal examination was found in majority of women .

Conclusions

There was a significant reduction in the need for traditional induction of labour as higher success rate of sweeping of membranes was noted for intiation of labour. Discomfort during vaginal examination was most significant side effect during study.

Corresponding Author | **Dr. Ayesha Ali**, Clinical Fellow Fetal Medicine, The Princess Alexandra Hospital, Harlow, UK.
Email: dr.ayeshaali@hotmail.com
Key Words: Effectiveness, Membrane Sweeping, Induction Rate.

Introduction

Induction of labour is an intervention that is often performed in a pregnancy due to various clinical reasons. Currently many methods are available however all have some degree of reported side effects. Sweeping of membranes is a non-invasive method which is usually undertaken when there is no urgency to induce labour or sometimes to prepare cervix for formal induction of labour. The purpose is to reduce use of medical methods of induction such as oxytocin, prostaglandins and amniotomy.

Post dates pregnancy is described as gestational amenorrhea of 42 weeks or greater1. It is associated with increased risk of perinatal morbidity and stillbirth, therefore is one of the common indications for induction of labour. Incidence of post dates or prolonged pregnancy ranges from 4-18%[1]. Membrane sweeping or scraping of membranes involves digital separation of fetal membranes from the cervix[2]. It is a recognised method of initiating the onset of labour without hospital admission. It is a commonly used method to prevent post dates pregnancies.

The rationale behind using sweeping of membranes is secretion of endogenous prostaglandins causing softening of the cervix and thus resulting in oxytocin induced uterine contractions. Plasma prostaglandin concentrations after sweeping are higher than those achieved in labour thus improving the outcome[3]. Sweeping of membranes at term reduces the incidence of prolonged pregnancies beyond 41 weeks and therefore one in eight women avert formal induction of labour[4].

There are no reports indicating that sweeping the membranes increases the risk of poor maternal or neonatal outcome[5]. A significant increase in perinatal mortality has been reported due to pregnancies extending beyond 43 weeks compared with those delivering at term[1].

The objective of this study was to find the effectiveness of sweeping the membranes in a low risk population as a means for decreasing the need of formal induction.

Methods:

This study was conducted at Lady Willingdon Hospital Lahore.Women eligible for study were singleton pregnancies at term with cephalic presentation and intact membranes. The high risk conditions related to pregnancy were excluded. After informed consent and ethical permissions, sweeping was carried out to prevent prolonged pregnancy. Post dates pregnancy was defined as gestational age of more than 40 weeks and induction of labour through membrane sweep was scheduled. Absolute contraindications for vaginal delivery like malpresentations, placenta praevia and previous uterine surgeries were excluded. Gestational age was calculated from the first date of last menstrual period and the dating scan carried out in first trimester.

During the antenatal visits, suitable women were informed of the study and the sweeping of membrane and side effects of the procedure were discussed. The ones who agreed were invited to participate. A total of 120 cases fulfilling the criteria visiting outpatients department of Lady Willingdon hospital Lahore were enrolled in the study. Study was conducted after ethical approval from institutional committee. Right of the patients to participate or opt out of study was respected. Sweeping of membranes was performed manually separating the lower edge of membranes as much as possible from the cervical attachment with three circumferential sweeps. In cases of closed cervix where sweeping was not possible, cervical massage was performed for 15 seconds.

Patients were again requested to attend after 48 hrs for followup visit and were assessed for any vaginal bleeding, painful contractions and leakage of amniotic fluid.Sweeping was repeated every 48 hours until labour commenced or the pregnancy became post dates whichever happened first. Patients were counseled to report any blood stained mucus or painful contractions. All patients were followed up upto 41 weeks of gestation for the effectiveness of sweeping of membranes (as per operational definition) and if spontaneous onset of labour did not start then they were induced according to the departmental protocol. A pre-designed proforma (attached as annexure) was recorded by the researchers.

Results:

In this study 120 cases were enrolled. The mean age of the patients was 25 ± 3.0 years. Among these women sweeping of membranes were performed in 110 women and cervical massage in10 women.

Results showed that the patients appeared with nulliparity were 31(25.83%), patients with parity one were 35(29.17%), the patients with parity two were 40(33.33%) and patients with parity three were 14 (11.67%).

Mean gestational age of the patients was 39 ± 1.0 week with minimum and maximum gestational ages of 38 & 41 weeks respectively.

The primary outcome of the study was the reduction in the need for medical induction. Amongst nulliparous women, total number was 31. Out of this 27 patients responded with sweeping and went into labour whereas 4 did not responded and ended in conventional methods of induction. Out of 35 patients who were para one, 32 responded and 3 did not. Similarly out of 40 with parity two, 36 responded and 6 did not. Remaining 14 patients were para three and above and amongst them 11 responded and 3 did not.

Repeated sweeping of membrane after 48 hrs during followup visit was performed in the group. 18 amonst total of 31 in nulliparity group needed repeat sweeping after 48 hours.Only 15 patients amongst 89 with

pervious parity needed repeat sweeping .No signify-cant side effects of membrane sweeping was noted in any patient regarding heavy bleeding and ruptured membranes .

Significant discomfort during sweeping noted in 110 patients amongst 120 which is significantly high .

Amongst 120 patients 106 went into spontaneous labour whereas 14 underwent formal induction acco-rding to protocols.

Patients with age below 25 years were 57 in which effectiveness was observed in 51 cases and effect-iveness was not observed in 6 cases. Similarly the patients who were above 25 years were 63 in which Effectiveness was observed in 55 cases and it was not observed in 8 cases. statistically there was no sig-nificant difference between the age in years and effectiveness of the patient with p-value is 0.711 ($p > 0.05$). However, the effectiveness in terms of initiation of labour was observed in 88.33% patients.

Table 1: *Descriptive statistics of age (years)*

Age (years)	n	120
	Mean	25.51
	SD	3.01
	Minimum	20.00
	Maximum	30.00

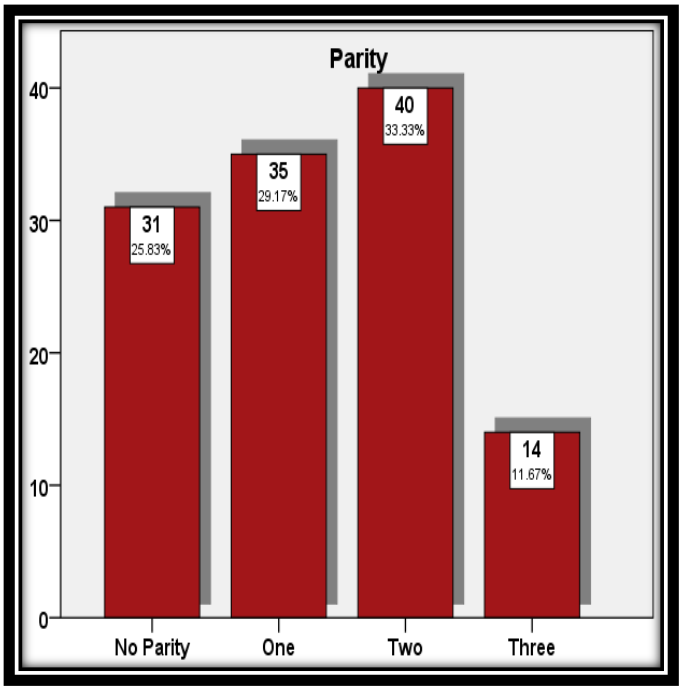

Figure 1: *Descriptive statistics of age (years)*

Table 2: *Descriptive statistics of gestational age (weeks)*

Gestational Age (weeks)	n	120
	Mean	39.23
	SD	1.04
	Minimum	38.00
	Maximum	42.00

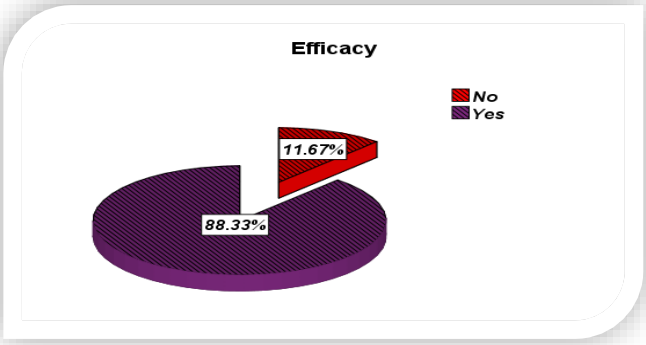

Figure 2: *Frequency distribution of Effectiveness*

Table 3: *Comparison of Effectiveness in different age groups*

		Effectiveness		Total	Chi-Value	P-Value
		Yes	No			
Age (years)	Below 25 years	51	6	57	0.137	0.711
	Above 25 years	55	8	63		
Total		106	14	120		

Table 4: *Comparison of Effectiveness in different parity groups*

		Effectiveness		Total	Chi-Value	P-Value
		Yes	No			
Parity	Nulliparous	27	4	31	1.744	0.621
	One	32	3	35		
	Two	36	4	40		
	Three	11	3	14		
	Total	106	14	120		

Discussion:

Postdate pregnancy is associated with increased risk of perinatal morbidity, poor mother and child out-comes. Sweeping of the membranes is an old and simple method to induce spontaneous onset of labour

and is frequently applied to prevent postdate pregnancies.[8,9]

This present study was done to determine the Effectiveness of membrane sweeping in women with term pregnancies attending the antenatal outpatient department of Lady Willingdon Hospital Lahore. According to our study results, Effectiveness of sweeping of membrane was observed to be 88.33%. In our study, statistically insignificant difference was observed between the parity and effectiveness & age and Effectiveness of the patient. Some of the studies conducted previously on this topic showed their results as follows.

Sadaftufail et al in Islamabad reported in their study that the membrane sweeping was associated with reduction in incidence of worst outcome in postdate pregnancy, less use of formal induction and augmentation of labour, lower rate of operative delivery and good fetal APGAR score.[10]

Another local study[6] recorded these findings in 38 of the 50 (76%) women, while another local study recorded these findings in 83% of the cases where the study was conducted on 30 women.[7]

A researcher from Paksitan showed that sweeping of membranes is an effective method of initiating labour, is safe and a useful procedure. The results showed reduction in incidence of prolonged pregnancy[11]. Foong et al mentioned in his study that sweeping is also useful in terms of better outcome when used in combination with formal methods of induction of labour.[12] E de Miranda et al demonstrated that membrane sweeping at 41 weeks signifycantly reduced the number of women with postdate pregnancies. Serial sweeping of the membranes at 41 weeks decreased the risk of postdate pregnancy as (87/375 [23%] versus 149/367 [41%].[13]

A previous study showed that 37 of the 40 (92.5%) women undergoing membranes sweeping delivered spontaneously before completion of 41 weeks of gestation[1].

Another international study using randamoized clinical control trail as study design showed that the sweeping of membranes is a safe method to reduce the postdates pregnancy in a low-risk population. There was no evidence that this method increased the risk of adverse maternal or neonatal outcomes when used in low risk groups.[5]

In several small studies, membrane sweeping has been seen to be an effective outpatient method of induction of labour to reduce the number of pregnancies exceeding 41 weeks. Membrane sweeping is also generally more effective in nulliparous women with unfavorable Bishop scores.[14-17]

In another international research patients were randomized to weekly sweeping of membranes or gentle exams starting from 38 weeks of gestation. Time to delivery was significantly reduced with membrane sweeping and there were less pregnancies going beyond 41 weeks.[18]

On the contrary, one study by Kashanian et al, produced conflicting results to a reported findings on clinical effect on the duration of pregnancy[23]. The limitations of the study includes small sample size, tertiary care hospital setting and cross-sectional research design. The way forward is multi centre randamoized clinical control trail and recruting larger number of pregnant females.

Conclusion:

Sweeping of membrane is an intervention that reduces prolonged pregnancies. Our study showed that the sweeping of membrane is an effective method to prevent postdate pregnancies.

Ethical Approval: Given
Conflict of Interest: The authors declare no conflict of interest
Funding Source: None

References:

1. Ibrahim Z, Saraya M, Elnahas K, Said M. Membrane Sweeping for Prevention of Post-Maturity in Low-Risk Term Pregnancies: A Randomized Controlled Trial. The Medical Journal of Cairo University. 2012 ;80(2):131.
2. Adeniji A, Akinola E. A comparison of orally administered misoprostol and membrane sweeping for labour induction in uncomplicated singleton post-term pregnancies. South African Journal of Obstetrics and Gynaecology. 2013;19(1):4-7.
3. Delaney M, Roggensack A, Leduc D, Ballermann C, Biringer A, Dontigny L, et al. Guidelines for the management of pregnancy at 41+ 0 to 42+ 0 weeks.

Journal of obstetrics and gynaecology Canada. JOGC. 2008;30(9):800-823.
4. Tan PC, Khine PP, Sabdin NH, Vallikkannu N, Sulaiman S. Effect of membrane sweeping on cervical length by transvaginal ultrasonography and impact of cervical shortening on cesarean delivery. Journal of Ultrasound in Medicine. 2011;30(2):227-233.
5. Yildirim G, Güngördük K, Karadag ÖI, Aslan H, Turhan E, Ceylan Y. Membrane sweeping to induce labor in low-risk patients at term pregnancy: a randomised controlled trial. Journal of Maternal-Fetal and Neonatal Medicine. 2010;23(7):681-687.
6. Mehmood H, Bashir A. Does sweeping of membranes in nulliparous women reduce the need for formal induction of labor?. Annals of King Edward Medical University. 2005;11(4).
7. Tufail S BT. Membrane sweeping at term for prevention of post-date pregnancy. JSOGP. 2011 :4(1):232-238.
8. Hilder L, Costeloe K, Thilaganathan B. Prolonged pregnancy: evaluating gestation?specific risks of fetal and infant mortality. BJOG: an international journal of obstetrics & gynaecology. 1998;105(2): 169-173.
9. Organization WH. WHO: recommended definitions, terminology and format for statistical tables related to the perinatal period and use of a new certificate for cause of perinatal deaths. Modifications recommended by FIGO as amended October 14, 1976. Acta Obstet Gynecol Scand. 1977;56(3):247-253.
10. Sadaf Tufail, Batool T. Membrane Sweeping at Term for Prevention of postdate pregnancy. JSOGP. 2011; 1(4).
11. Aliya Nasim, Rubina Tahir, Uzma Nusrat. Is membrane sweeping appropriate in modern obstetrics for induction of labour in post date pregnancies? Pak J Surg. 2011;27(3):223-228.
12. Foong L, Vanaja K, Tan G, Chua S. Membrane sweeping in conjunction with labor induction. Obstetrics & Gynecology. 2000;96(4):539-542.
13. De Miranda E, Van Der Bom JG, Bonsel GJ, Bleker OP, Rosendaal FR. Membrane sweeping and prevention of post?term pregnancy in low?risk pregnancies: a randomised controlled trial. BJOG: an international journal of obstetrics & gynaecology. 2006; 113(4):402-408.
14. Chez RA. Cervical ripening. Clinical obstetrics and gynecology. 1998;41(3):606-610.
15. Goldenberg M, Dulitzky M, Feldman B, Zolti M, Bider D. Stretching of the cervix and stripping of the membranes at term: a randomised controlled study. European Journal of Obstetrics & Gynecology and Reproductive Biology. 1996;66(2):129-132.
16. Eltorkey M, Grant JM. Sweeping of the membranes is an effective method of induction of labour in prolonged pregnancy: a report of a randomized trial. BJOG: an international journal of obstetrics & gynaecology. 1992;99(6):455-458.
17. Cammu H, Haitsma V. Sweeping of the membranes at 39 weeks in nulliparous women: a randomised controlled trial. BJOG: an international journal of obstetrics & gynaecology. 1998;105(1):41-44.
18. Berghella V, Rogers R, Lescale K. Stripping of membranes as a safe method to reduce prolonged pregnancies. Obstetrics & Gynecology. 1996;87 (6):927-931.
19. Tannirandorn Y, Jumrustanasan T. A comparative study of membrane stripping and nonstripping for induction of labor in uncomplicated term pregnancy. Journal of the Medical Association of Thailand= Chotmaihet thangphaet. 1999;82(3):229-233.
20. Dare F, Oboro V. The role of membrane stripping in prevention of post-term pregnancy: a randomised clinical trial in Ile-lfe, Nigeria. Journal of Obstetrics & Gynecology. 2002;22(3):283-286.
21. Wiriyasirivaj B, Vutyavanich T, Ruangsri R-A. A randomized controlled trial of membrane stripping at term to promote labor. Obstetrics & Gynecology. 1996;87(5):767-770.
22. Magann EF, McNamara MF, Whitworth NS, Chauhan SP, Thorpe RA, Morrison JC. Can we decrease postdatism in women with an unfavorable cervix and a negative fetal fibronectin test result at term by serial membrane sweeping? American journal of obstetrics and gynecology. 1998;179(4):890-894.
23. Baradaranb MKAAH, Samieea MM. Effect of membrane sweeping at term pregnancy on duration of pregnancy and labor induction: a randomized trial. Gynecol Obstet Invest. 2006;62(4):41-44.
24. Mccolgin SW, Hampton HL, Mccaul JF, Howard PR, Andrew ME, Morrison JC. Stripping membranes at term: can it safely reduce the incidence of post-term pregnancies? Obstetrics & Gynecology. 1990; 76(4):678-680.