

Membrane sweep and stretch at term pregnancy: preventing prolonged pregnancy

*Roeda Shams, Abida Nasreen

¹Department of Gynecology & Obstetrics, Rehman Medical Institute, Peshawar, Pakistan.

²Department Gynecology & Obstetrics, Khyber Teaching Institute, Peshawar, Pakistan.

ABSTRACT

Background: Artificial initiation of labor process before its spontaneous onset is common procedure conducted in all essential obstetric units. Prolonged pregnancy is considered to be the most common indication for induction of labor. Waiting for spontaneous labor after 41 weeks of gestation and formal induction of labor, both carry maternal and fetal risk. The main purpose of this study was to observe whether a non-pharmacological method of induction i.e. membrane sweeping can prevent prolonged pregnancy and reduce the need for formal induction.

Methodology: This observational study was conducted at Rehman Medical Institute (RMI) on 100 pregnant females.

Results: Fifty six patients were multiparous. Out of the total patients, 63 presented with active labor within next 14 days. Beyond term, 21% pregnancies went beyond 40 weeks and were formally induced.

Conclusion: Routine sweep and stretch, or membrane sweeping at 38 weeks of gestation prevents prolonged pregnancy to some extent and, hence, the need for formal induction.

Keywords: Sweep and stretch, membrane sweeping, prolonged pregnancy, induction

*For Correspondence

Roeda Shams

Department of Gynecology & Obstetrics, Rehman Medical Institute, Peshawar, Pakistan.

E.mail:

roeda.shams@rmi.edu.pk

INTRODUCTION

Induction of labor is one of the commonest procedures undertaken in obstetric practice. The current rate of labor induction is 20% in UK¹ and 13% in USA.² Among a wide range of indications for induction, the most common one is post term pregnancy (>42 weeks from the last menstrual period (LMP), with an incidence of about 4-18%.³ Prolonged pregnancies are associated with increased perinatal morbidity and mortality.^{4,5} Thus, to avoid these complications, many authorities including National Institute of Clinical Excellence (NICE) and World Health Organization (WHO)⁶ offer elective induction after 41 weeks of gestation.^{7,8} Waiting for spontaneous labor after 40 weeks requires extensive antenatal testing.⁹ Further formal induction of labor carries complications like failed induction, hyper-stimulation, uterine rupture, more pain, more need for analgesia and increased risk of caesarean section.^{10,11}

The major factor that determines success of induction

of labor is initial Bishop scoring, based on measurements made by doing a vaginal examination on the station, dilation, effacement (or length), position and consistency of the cervix. A score of eight or more generally indicates that the cervix is ripe, or 'favorable' – when there is a high chance of spontaneous labor, or response to interventions made to induce labor. Cervical ripening means softening, effacement and dilatation before active labor.¹² Numerous non-pharmacological and pharmacological methods have been used to promote cervical ripening, including sexual intercourse, nipple stimulation, a variety of herbs and homeopathic solutions, castor oil, enemas, acupuncture, stripping the membranes, mechanical dilation, amniotomy and prostaglandins. Stripping of membranes isn't regarded as a formal method of induction but adjuvant prior to pharmacological induction. Sweeping of membranes is simple, non-pharmacological procedure done in an outpatient setting, without need for admission, by which local prostaglandin is released and promotes cervical ripening.¹³

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Though various studies have shown the efficacy of this simple procedure in preventing prolonged pregnancy and reducing the need for formal induction, there are still some conflicting results.

METHODOLOGY

This prospective observational study was conducted in outpatient department of Rehman Medical Institute (RMI) from October 2018 to March 2019. A total of 100 patients were recruited in the study after taking informed consent. Only booked patients were selected to ensure follow up till delivery. Membrane sweeping was performed by a single observer. Patients included were with uncomplicated singleton pregnancy with previous one caesarean scar, multipara with breech (who refused external cephalic version) or mild PIH (Pregnancy Induced Hypertension) were included in study. Patients with polyhydramnios, previous two or more C-sections, placenta previa, borderline pelvis or severe hypertension were excluded from study. Patients were called at 38th week of gestation, and requested to empty bladder and lie down in supine position. Index finger was lubricated with Xylocaine Gel, introduced into cervix negotiating internal os, and rotated once against lower uterine wall clock wise at 360 degrees to

separate chorionic membrane from decidua. After the procedure, patients were informed not be worried about blood stained discharge for the next 24 to 48 hours, and to report in case of regular contractions or watery discharge, or at 40 weeks for follow-up or repeat stripping, if permitted by the patients. Data was collected in terms of parity, Bishop score at the time of procedure, duration between the procedure and onset of labor, complications like PROM (Premature rupture of membranes), mode of delivery and need for formal induction, and analyzed using SPSS Version 20.0 as means and percentages. P value ≤ 0.05 was taken as significant.

RESULTS

A total of 100 patients were included in the study, of which 56 patients were multiparous and 44 patients were primiparous (Table 1). 63 patients presented with active labor, nearly half of them presented within first 24 hours of membranes stripping. Of the remaining 37 patients, about 58% went beyond 40 weeks and were formally induced (Table 2). Most of the patients had a poor Bishop score of less than eight (56% cases), of which 48% presented with active labor, as compared to 81% of patients with good Bishop score (Table 3).

Table 1 - Parity distribution in relation to outcome of membrane sweeping

Parity	Membrane Stripping	Active Labor	Formal Induction
Primiparous	44	21(33%)	9
Multiparous	56	42(66%)	12
Grand total	100	63(100%)	21

Table 2 - Final outcome of sweep and stretch

Presenting Complaint	No of patients
Active labor	63
PROM	11
Need for Formal induction	21
Need for Elective C-section	5
Grand total	100

Table 3 - Initial Bishop score in patients going into active labor

Initial Bishop scoring at time of sweep and stretch	Total no. of patients	No. of patients in active labor
<8	56	27
>8	44	36

DISCUSSION

Both post-term pregnancy and induction of labor is associated with fetal and maternal complications. Though several studies and reviews have been conducted to find the efficacy of stripping of membranes at term in preventing prolonged pregnancies and formal induction of labor, there are still some conflicting results.

The average rate of induction of labor in the obstetrics unit at Rehman Medical Institute (RMI) was 23%, which is very high as compared to the international rate of 13-20%. Our current study did not demonstrate any huge difference in reduction of formal induction of labor (from 23% to 21%, a reduction of 2%). The result of a prospective randomized controlled trial conducted by Wong et al., also concluded that sweeping of membranes beyond 40 weeks is safe in terms of risk of PROM, vaginal bleeding and peripartum infection, but reduction of formal induction observed was small (from 38% to 35%, an absolute reduction of 3%).¹⁴

The results of Cochrane Reviews of 13 trials¹⁵ and a large randomized controlled trial¹⁶ were also consistent with our study, concluding that membrane sweeping at term reduces formal induction of labor and reduces prolonged pregnancy, but this reduction was not statistically significant.

The results of present study were not comparable to one systematic review and meta-analysis on 12 studies, which observed that membrane stripping was safe and effective in promoting labor (RR =1.205, 95% CL: 1.133-1.282) and reducing formal induction of labor (RR=0.523, 95% CL: 0.409-0.669, P= <.001).¹⁷

Initial Bishop scoring played an important role in success of membrane stripping in initiating active labor. A randomized controlled trial evaluating frequency of membrane sweeping at 39 weeks with unfavorable cervix shows that it was the bishop score at 39 weeks, and not the frequency of membrane sweeping, that influenced the likelihood for the pregnancy remaining undelivered till 41 weeks.¹⁸ Our study also showed that the proportion of patients, who went into active labor after membrane stripping, was larger from the group with favorable Bishop score than patients with poor initial Bishop score (57% verses 43%). We performed membrane sweeping only once in all of the patients.

Multiparity was another factor affecting the efficacy of sweep and stretch. In our study, 42(66%) multiparous women went into active labor, as compared to 21 (33%) primiparous. This may be indirectly related to the difference

in Bishop scoring, whereas, a study by Gokhan et al., did not find any difference between multiparous women and primiparous women regarding effectiveness of membrane sweeping (primiparous versus multiparous, p=0.33).¹⁹

Membrane sweeping may result in complications like PROM, vaginal bleeding, and maternal or fetal infections. Our study observed PROM in 11% patients, whereas, four other published studies^{20,21} found membrane sweeping a safe procedure, with no significant incidence of these complications.

CONCLUSION

Routine sweep and stretch, or membrane sweeping, at 38 weeks has negligible reduction in prolonged pregnancy and the need for formal induction. Therefore, sweep and stretch cannot be recommended on routine basis.

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