The Role of Membrane Sweeping in Induction of Labor

Ayşe GÜNAY
Bursa- Turkey

OBJECTIVE: To determine the effect of the membrane sweeping (stripping) in labor induction and outcome of labour.
STUDY DESIGN: The outcomes of labour induction (induction-delivery duration and mode of delivery) in term (38-42 weeks) pregnant women who swept or not swept at the onset of oxytocin induction.
RESULTS: Sweeping the membranes have no significant effect on induction-delivery duration and mode of delivery in oxytocin induced term pregnant patients.
CONCLUSION: There were no statistically differences in the outcome measures (induction-delivery duration and mode of delivery) in multiparous and parous women at 38-42 weeks of gestation. No harmful side effects were noted according to the procedure.
(Gynecol Obstet Reprod Med 2006; 12:169-172)

Key Words: Sweeping, Stripping, Membranes, Labour induction, Term pregnancy

Sweeping of the membranes in labour induction is generally accepted as an effective method in term (38-42 weeks) and postterm pregnancies (≥42 weeks).[1] This method is an old one and applied to the suitable patients which don't need urgent labour and don't have maternal and fetal risks. In the literature survey, the effectiveness of this procedure in labour induction is still unclear and some authors found no differences in outcome measures that include duration of labour, need for caesarean section, need for oxytocin induction.[2] This procedure gives discomfort to the patient and carries potential risks such as bleeding, irregular contractions and infection. Another recent study states that, sweeping membranes in women with a gestational age of 41 weeks reduces the post-term pregnancy incidence and finds it as a simple and effective method for induction of labour.[3]

The aim of this study is to determine the effectiveness and the outcome differences and the risks of sweeping of the membranes (also named stripping of the membranes) in low-risk term pregnancies which have also had oxytocin induction as well.

Material and Method

One hundred and twenty-two term (38-42 weeks) pregnant women were enrolled to the study between May 2005-June 2006. All pregnant women had no risk factors such as severe preeclampsia, intrauterine growth retardation, multifetal gestation, breech presentation, prelabour rupture of membranes, macrosomia, diabetic pregnancy, previous caesarean section and no contraindications to normal vaginal delivery, no blood loss in the second and third trimester. In labour induction 1% oxytocin infusion is used. Oxytocin infusion rate is determined according to the patient's response until 4-5 contractions in every 10 minutes achieved. All patients had Bishop score 1-2 (mean 3 cm. dilatation and 40-50% effacement) at admission. In study patients the membranes were separated from the cervix and lower part of the uterus as far as possible with a finger inserted in the cervical canal at the onset of induction. In the control group only gentle vaginal examinations were done in order to determine Bishop score. Gentle vaginal examinations were done at 2-hour intervals in the labour room. Routine monitorization was applied to all patients before sweeping the membranes or the onset of induction. Outcome measures in this study were delivery route; interval between start of induction and delivery (duration of labor).

Statistical analysis: The Statistical Program for Social Sciences (SPSS 13.0) for Windows software was used for the calculations. Student's t-test; Chi-Square and Fisher's exact tests were used in comparisons and $p< 0.05$ was considered statistically significant.

Results

80 nulliparous (39 sweep, 41 non-sweep) and 42 parous (22 sweep, 20 non-sweep) patients at 38-42 weeks were enrolled. All patients were given oxytocin induction after Bishop scoring and fetal monitoring and the study group patients were swept just before the onset of induction. The sweeping procedure was made only once and not repeated during the active labour and during the oxytocin induction period. The labour duration and mode of labour was scheduled (Table 1).

There were no statistical differences between study and control groups in terms of maternal age, gestational age, parity and Bishop scores. Nulliparous and parous patients are separately compared in terms of age, gestation week at admission and Bishop scores in their groups. There were no statistically difference between group parameters ($p> 0.05$)

Zübeyde Hanım Doğumevi - Kadın Hastalıkları, Bursa, Turkey

Address of Correspondence *Ayşe Günay*
Kükürtlü Mahallesi, Çekirge Cad:102/10
Bursa-Turkey

Submitted for Publication: 22.08.2006

Accepted for Publication: 04.09.2006

Table 1. Characteristics of patients

Characteristic	Nulliparous Sweep	Nulliparous No Sweep	Parous Sweep	Parous No Sweep
Age (y)	23.5±5.4	24.4±3.9	28.0±5.2	28.1±5.0
Gestation(wk)	40.2±1.5	40.3±1.3	39.9±1.3	40.2±1.2
Parity	0	0	1.8±1.2	1.7±0.9
Reasons for induction (%)				
Overdate	53%	51%	41%	40%
Non-R NST	3%	4%	18%	-
Oligohydramnios	10%	14%	4%	5%
Light Preeclampsia	5%	-	-	10%
Bad obstetrical hystory	-	-	14%	10%
Other(Latent phase)	29%	31%	23%	35%
Labor complications (%)				
Meconium stained liquor	5.3%	0	4.5%	0
Admission to neonatal unit	5.3%	0	0	0

Table 2. Delivery Mode

	n	Spontaneous vaginal delivery n(%)	Cesarean delivery n(%)	Odd's Ratio (95% confidence interval)
Nulliparous				
Sweep	39	29(74.4%)	10(25.6%)	0.25 -1.74
No sweep	41	27(65.8%)	14(34.2%)	
Subtotal	80	56(70.0%)	24(30.0%)	
Parous				
Sweep	22	18(81.8%)	4(18.2%)	0.20 - 5.40
No sweep	20	17(85.0%)	3(15.0%)	
Subtotal	42	35(83.3%)	7(16.6%)	

In the study group (in sweeping + oxytocin induction group) 29 nulliparous women (74.4%) delivered by normal vaginal route and 10 women (25.6%) had cesarean section. In the control group (only iv oxytocin induction applied) the rates were 27 (65.8%) and 14 (34.2%) respectively (Table 2). When the parous patients were considered; the normal delivery rate was 81.8% (18) and section ratio was 18.2% (4). The rates in the control group were 85% (17) and 15% (3). When the rates compared statistically by Pearson Chi-Square and Fisher's exact tests for the nulliparous and parous patients separately the sweeping procedure showed no significant effect on delivery route (Four-chambered Chi-Square test: p: 0.974>0.05 for vaginal delivery and p: 0.469>0.05 for cesarean section patients; Fisher's exact test: p: 0.572 >0.05 for vaginal delivery and p: 0.383> 0.05 for cesarean section patients).

When the labour duration (induction-delivery interval in minutes (min)) was considered for the nulliparous patients who delivered by spontaneous vaginal route, the mean delivery time in the study group was 351±147.5 min. versus 287±102 min. in the control group. The mean delivery time in the parous group was 308±153.9 min. for the swept group and 249±164.3 min.for the control patients respectively. When these results were analysed statistically; the differences between the variances of the nulliparous and the parous groups were not found statistically significant (p>0.05).

The cesarean section rate for study and control groups were 22.9% (14) and 27.8%(17) respectively (The risk difference ratio: 0.77>0.05). Sweeping procedure had no significant effect on labour route or labor duration in oxytocin induced term pregnant patients.

Discussion

Miranda E. et.al have found sweeping procedure as an effective method in labour induction especially for the post-term patients in a recent study.[3] They have found that membrane sweeping reduced the number of post-term pregnancies and increased spontaneous onset of labour between 41-42 weeks interval. They have found this procedure effective in both in nulliparous and parous women. In their study, iv oxytocin or prostoglandine E (PGE) pessary for labour induction was not conducted unless the rupture of the

membranes occurred. Allott et.al also found sweeping a safe and usefull procedure in reducing the incidence of post-mature pregnancies and a reduction in the labour induction rate.[4] In contrast, Kashanian et.al have found no significant effect of the sweeping on the labour induction and any increase in the sweeping related complications such as vaginal bleeding, rupture of membranes or postpartum infections.[5] They have used the sweeping procedure as a labour induction method and comparing was made with the non-swept patients group beyond 39 weeks.

Wong et. al stated that, sweeping of the membranes beyond 40 weeks did not reduce the need for formal induction of labor at 42 weeks. Allthough it was found to be a safe procedure, women found this examination uncomfortable.[6] In this study the formal oxytocin induction method was not used until the 42 weeks of gestation and between the study and control groups no statistically difference was found for the need for formal induction of labour at 42 weeks.

In a series review of methods of cervical ripening and labour induction from the Cochrane register; 22 trials were reviwed comparing sweeping of membranes with no treatment, three comparing sweeping with prostoglandines and one comparing sweeping with oxytocin and was found no clinically important benefits and the increasing risk of cesarean section.[2] According to the literature survey Boulvain stated that use of sweeping of the membranes from 38 weeks of pregnancy onwards doesn't seem to produce important benefits in labour duration, reducing the risk of post-maturation and section rates.

Foong LC, et al studied 130 nulliparous and 118 parous women at term (38-42 weeks). They have used iv oxytocin or PGE pessary for labour induction and the indications for induction were hypertension, intrauterine growth restriction, post-term pregnancy, gestational diabetes and oligohydramnios.[7] In this study, only in the nulliparous study group, induction and sweeping was found to be effective in reducing the induction-to-delivery interval and an increasing tendency to the spontaneous vaginal delivery.

In our study, sweeping at the onset of labour-induction with oxytocin doesn't seem to be an effective method in reducing the induction-to-delivery intervals and increased likelihood of normal delivery both in nulliparous and parous patients. Sweeping procedure was shown to increase the plasma prostoglandine (PG) levels and Fuchs et al. stated that PG levels are increased about one-tenth those achieved during active labour that might be sufficient to augment the labour and improve the labour outcome.[8] In our study group we could'nt show this effect maybe because of sweeping was applied only one time at the onset of induction. In a former research, Swann reported an induction success rate of 69% when patients swept three times daily.[9] Allott stated that the primiparous patients even with unfavourable cervix have got benefit from this procedure.[4] In this study the sweeping is repeated during the vaginal examinations in the labour period and Doany, in another study used PGE pessary with serious sweeping examinations.[9,10] The success of the sweeping procedure in these studies can be related to the additive methods or to the repeated sweeping. Repeating the sweeping in every vaginal examination may increase the complication rate and this could have little benefit over formal oxytocin or PG induction. In our study no adverse effects were found such as vaginal bleeding, rupture of membranes, puerparal or neonatal infections.

Conclusion

Sweeping the membranes has no side effect when in suitable patients used but women feel discomfort during the procedure and some minor side-effects such as bleeding or irregular contractions or infection may occur when sweeping repeatedly applied. In the literature survey the effect of sweeping the membranes in the induction of labour is not found generally a reliable method.[1,12] In our study sweeping had no additive effect to the labour induction with oxytocin in terms of outcome measures (induction-delivery duration and mode of delivery) but this method may be used in patients at 42 weeks gestation or post-mature patients while some previous randomized studies supports the positive effect of sweeping especially in nulliparous post-term patients.[3,7,11,12]

References

1. Boulvain M, Irion O, Marcoux S, Fraser W. Sweeping of the membranes to prevent post-term pregnancy and to induce labour: A systematic review. Br J Obstet Gynecol 1999; 106:481-5.

2. Boulvain M, Stan C, Jrion O. Membrane sweeping for induction of labour. Cochrane Database Syst. Rev. 2005; 32: 152-152(1).

3. Miranda E, Bom JG, Bonsel GC, Bleker OP, Rosendaal FR. Membrane sweeping and prevention of post-term pregnancy in low risk pregnancies: a randomised controlled trial. BJOG 2006; 113:402-8.

4. Allott HA, Palmer CR. Sweeping the membranes: a valid procedure in stimulating the onset of labour. BJOG 1993; 100:898-903.

5. Kashanian M, Akbarian A, Baradaran H, Meshki M. Effect of membrane sweeping at term pregnancy on duration of pregnancy and labor induction: a randomized trial. Gynecologic and Obstetric Investigation 2006; 62:41-4.

6. Wong SF, Hui SK, Choi H, Ho LC. Does sweeping of membranes beyond 40 weeks reduce the need for formal induction of labour? BJOG 2003; 110:711-5.

7. Foong LC, Vanaja K, Mracog G, Tan G. Membrane sweeping in conjunction with labour induction. Obstetrics & Gynecology 2000; 96:539-42.

8. Fuchs AR. Prostoglandin F2 alpha and oxytocin interactions in ovarian and uterine function. J Steroid Biochem 1987; 27:1073-80.

9. Swann RO. Induction of labour by strippingbranes. Obstet Gynecol 1958; 11:74-7.

10. Doany W, McCarty J. Outpatient management of the uncomplicated postdate pregnancy with intravaginal prostaglandin E2 gel and membrane stripping. J Matern Fetal Med 1997; 6:71-8.

11. Weissberg SM& Spellacy WN. Membrane stripping to induce labour. J. Reprod. Med; 19: 125-7.

12. McColgin PG, Bennett WA, Roach H, Cowan BD, Martin JN, Morrison JC. Parturitional factors associated with membrane sweeping. Am J Obstet Gynecol 1993; 169:71-7.