ORIGINAL ARTICLE

Frequency of Labour Induction at Term with Sweeping of The Membranes

SHAMILA IJAZ MUNIR[1], SHAHINA ISHTIAQ[2], SHAGUFTA GULZAR[3]
[1]*Assistant Professor, King Edward Medical University.* [2]*Assistant Professor, Ziauddin University Karachi.*
[3]*Ziauddin University Karachi*

ABSTRACT

Objective: To assess the effectiveness of membrane sweeping for induction of spontaneous labour at term.

Material & Methods

Design: A randomized controlled trial

Setting: Dr. Ziauddin Hospital, Karachi, Pakistan

Duration: August 5, 2012 to August 4, 2013

Sample Size: A total of 210 patients were included.105 patients were subjects and 105 were controls.

Methods: Sweeping of membranes was performed 38 weeks onward till 40 weeks in cases and no intervention was done in controls till 41 weeks.

Main Outcomes Measures

the number of women having successful induction of labour by sweeping of membranes.

the women who did not go in spontaneous labour and required pharmacological method for labour induction.

to compare recruitment to delivery interval in study group.

Results: In interventional group, 62.9% of swept women went into labour and 37.1% required labour induction with the methods other than sweeping while in the control group, 43.8% women went into spontaneous labour and 56.2% required their labour to be induced with the methods other than sweeping. Result found statistically significant ($p<0.05$).

Conclusion: Sweeping of amniotic membranes from 38 weeks onward to induce onset of labour is an effective maneuver. It decreases the frequency of post date pregnancy and need to use pharmacological methods of labour induction which are not without risks to the mother and the fetus.

Key words: Sweeping of membranes,induction of labour,postdate pregnancy

INTRODUCTION

Labour induction is one of the most common obstetric interventions. About 20% of term pregnancies require labour induction[1]. Studies have shown that the risk to mother[2-3] and fetus[4-5]increases with continuing the pregnancy beyond the estimated date so that the labour induction at 41 weeks is justified.[6]

Historically labour induction has often involved pharmacologic (i.e. the use of oxytocin and prostaglandins) or mechanical intervention to promote softening& effacement of cervix. This helps in shortening induction to delivery interval. The result of case control trials have not shown one labour induction method to be statistically better than another.[7]In Contrast to pharmacological methods, the sweeping of membranes is easy to perform with low cost and reduced side effects.[8]

All methods of labour induction have been studied in the west as well as in our country and they concluded that, currently available methods like oxytocin, amniotomy and prostaglandins are reasonably efficient but despite being effective are associated with adverse outcomes and increased maternal and fetal morbidity and mortality.ProstaglandinsE2 has been the most popular agent among research workers but it is very costly. Main problem with the use of oxytocin and prostaglandins is the unpredictability of response which may result in failure of methods or otherwise hyperstimulation of uterus.

The stripping or sweeping of amniotic membranes from the lower uterine segment in pregnant women is a mechanical method of labour induction, it is simple, easy to perform and inexpensive. It has long been known to cause release of local prostaglandins and its metabolitesleading to the initiation of process of labour. This ultimately associated with ripening of

cervix[9] and increased frequency of uterine contractions.[10]

Sweeping after 38 weeks of gestation reduces the pregnancy duration and thus reduces the incidence ofpostdates pregnancyand the need of pharmacological methods of labour induction.[11-12] The overall reduction is 14% (comparing sweeping with no sweeping).A lot of international studies have been conducted regarding the effectiveness of membrane sweeping but seldom studies have been done locally, the paucity of the literature made us to undertake this topic so that this method and its effectiveness could be studied in our population.

It is a routine practice in some health care facilities to perform membrane sweeping before the induction of labour with prostaglandins.[13] It is associated withincreased success of medical induction of labour within 48 hours (63.8 VS 83%) and decreased incidence of pregnancy prolonged beyond 41 weeks or more (18.6 VS 29.9%).[14]

METHODS

This randomized controlled trial was conducted from August 5, 2012 to August 4, 2013 at Dr Ziauddin hospital, department of gynaecology & obstetrics after approval from ethical review committee of the hospital.Total 210 subjects were recruited with 105 in each group at 95% confidence interval, 59% margin of error, 80% power by using consecutive sampling technique.

Inclusion criteria:

1. Term singleton pregnancy with cephalic presentation and intact membrane.
2. Candidate for non urgent labour induction due to any reason, like pregnancy induced hypertension, gestational diabetes mellitus and mild to moderate intra uterine growth restriction.

Exclusion criteria:

1. Multiple gestations
2. Abnormal presentation and lie
3. Preterm or post-term pregnancy
4. Placenta previa and abruption

All pregnant patients meeting inclusion criteria were informed and invited to be a part of the study after taking informed consent. Induction of labour was planned at 38 weeks of gestation and fetal surveillance was done by performing CTG before and after sweeping. Data was collected on age and parity. Gestational age at the time of recruitment was same that was 38 weeks of gestation. Patients were stratified into study and control group by using sealed envelope method. To prevent prostaglandins release, no vaginal examination was performed in control group till the labour onset, or 41 weeks of gestation. In patients allocated to study group, vaginal examination for the assessment of bishop score was done followed by immediate sweeping performed by separating the lower membrane from their cervical attachment with clock wise and counter clock wise movements of examining fingers. When sweeping was not possible to be performed due to closed cervix, cervical massage was used to done for 15 seconds. Sweeping was performed weekly starting from 38 till 40 weeks with maximum of 3 times until labour commenced or 41 weeks gestation was reached. Patients were instructed to report in labour ward if they had labour pains, leaking or show (blood stained discharge),occurrence of delivery before 41 weeks was considered as success of intervention while undelivered patients till 41 weeks were taken as intervention failure. Formal methods of labour induction i.e. intravaginal prostaglandin E2 or intravenous oxytocin with or without amniotomy was carried out in patients of both groups who were undelivered till 41 weeks of gestation. Proportion of women delivered and need of pharmacological methods of labour induction was compared in both groups as primary outcome and recruitment to delivery interval was comparable in both groups as secondary outcome.

DATA ANALYSIS

Data analysis was performed through SPSS 11.0. Result was calculated as frequencies and percentages for the qualitative data i.e. parity (nullipara or multipara), proportion of women delivered till 41 weeks and women required formal method of labour induction. Mean and standard deviation was calculated for quantitative data i.e. age and recruitment to delivery interval (in days). Chi- square test was applied to compare proportion differences between two groups. P-Value <0.05 was taken as significant.

RESULTS

In a 12 months study, total 210 women were included, among which 105 were allocated for sweeping and rest of 105 were acting as control. The baseline characteristics of two groups i.e. age, parity and gestational age at recruitment were

similar (table1). Pregnancy outcome of two groups are listed in (table2). Large proportion of women went into labour and delivered till 41 weeks in sweeping group (62.9 % VS 43.8 % , P= 0.006). Small proportion of women went beyond 41 weeks and required pharmacological method of labour induction (37.1% VS 56.2 % , P=0.006). The overall risk reduction of formal labour induction was 19%. Sweeping significantly reduces the recruitment to delivery interval by 4 days (13.3 ± 8.05 vs 17.1 ± 7.48, P=0.001). Membrane sweeping was not painful according to 1.9% women however, 29.5%, 50.5%, 17.1% women judged sweeping to have mild, moderate and severe discomfort respectively and while 1% experienced sweeping as painful. (Table3,graph1). After delivery 62.9 % women were satisfied and would like to choose membrane sweeping for labour induction in next pregnancy.

Table 1: Demographic characterists of women recruited for the study

Demographic characteristics	**Cases (N=105)**	**Controls (N=105)**	**P – value**
Age (years)	27.3 [4.89]	27.4 [5.08]	0.836
Parity Nulliparous Multiparous	49(46.7%) 56(53.3%)	56(53.3%) 49(46.7%)	0.334
Gestational age at recruitment (Weeks)	38.0	38.0	

Tables 2: Pregnancy outcome for 2 groups

	Study group N = 105	**Control N = 105**	**P – value**
Delivery till 41 weeks (yes)	66 (62.9%)	46 (43.8%)	0.006
Need of pharmacological Labour induction(Yes)	39 (37.1%)	59 (56.2%)	0.006
Recruitment to delivery interval (Days ± SD)	13.3 ± 8.05	17.1 ± 7.48	0.001

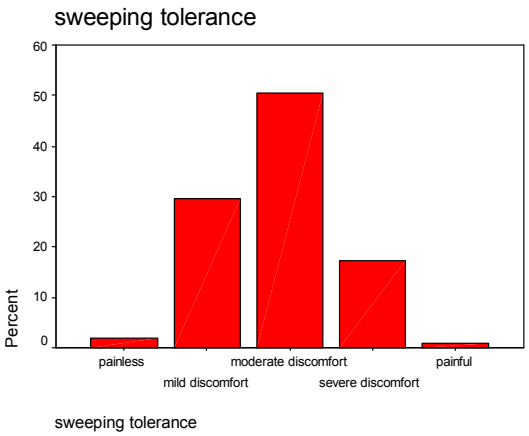
Table 3: Sweeping Tolerance

Sweeping Tolerance	**No of patients**	**%**
Painless	2	1.9
Mild discomfort	31	29.5
Moderate disomfort	53	50.5
Severe discomfort	18	17.1
Pain	1	1
Total	105	100

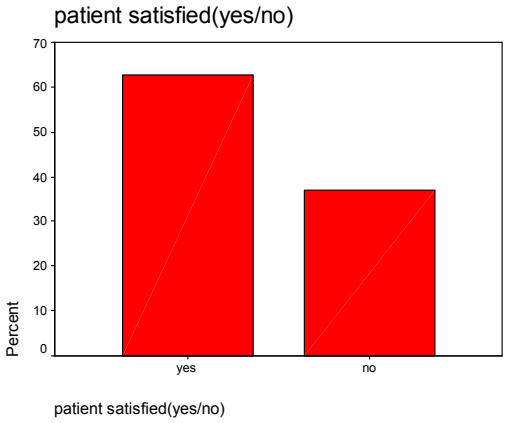
Table 4: Patient Satisfaction

Patient Satisfaction	**Count (%)**
Yes	**66(62.9%)**
No	**39(37.1%)**
Total	**105(100%)**

Graph 1



Graph 2



DISCUSSION

Many studies have been conducted regarding the effect of membranes sweeping in relation to labour but the data is inconsistent because of the fact that different obstetricians were performing different methods to achieve successful outcome. Boulvain et al[15] found that use of membranes sweeping at term does not seem to be clinically significant in induction of labour. When sweeping is used as a mean of induction it should be balanced against women's discomfort, pain &other adverse effects.[16]Wong SF[8] and Boulvain et al[15] have failed to show membranes sweeping beyond 40 weeks as effective in reducing incidence of pharmacological induction of labour.

In Boulvain meta analysis twenty-two trials (2797 women) were included, twenty compared sweeping of membranes with no intervention, three comparing use of prostaglandins with membrane sweeping and one comparing sweeping with oxytocin induction. Sweeping of the membranes was performed in women at term, was associated with reduction in the duration of pregnancy and reduced frequency of prolonged pregnancy beyond 41 weeks (RR 0.59, 95% CI 0.46 to 0.74) and 42 weeks (RR 0.28, 95% CI 0.15 to 0.50).With more frequent reporting of discomfort & pain during vaginal examination and other adverse effects (bleeding, irregular contractions) in ladies allocated to sweeping.

In Wong's study, sixty women were allocated to the sweeping group and control group each. Results were comparable with our study. The recruitment to delivery interval was shorter in women with sweeping of membranes (3.2 versus 4.2 days, P < 0.05). The incidences of need of formal induction of labour were comparable (Sweeping—35%versus control—38%). The procedure was associated with significant discomfort in about 70% of the women. About 20% of women complained of significant pain.

In Boulvain study two hundred women were included in whom induction of labour was indicated. Women were randomly assigned to sweeping of membranes, or vaginal examination for Bishop scoring only. Women allocated to sweeping of the membranes required formal induction of labour less frequently than women in the control group, but this difference was not statistically significant (49% vs 60%, RR 0.83, 95% CI 0.64-1.07). Pain during vaginal examination and other side effects were more frequently reported by women allocated to the sweeping group.

CONCLUSION

Membranes sweeping at 38 completed weeks of pregnancy onward is effective manoeuvre to start the labour and it reduces the need of pharmacological methods of labour induction.It is simple, easy to perform and economical method of labour induction.

REFERENCES

1. Government statistical service NHS Maternity statistics, England: 2003- 04 Bulletin 2005 / 10 March 2005. Available at: http://www.dh.gov.uk/assetRoot/04/10/70/61/04107061.pdf. Retrived December15, 2005.
2. Chhabra S, Dargan R, Nasare M. Postdate pregnancies: management options.Obstet Gynecol India 2007; 57(4):307.
3. Caughey AB, Musci TJ. Complications of term pregnancies beyond 37 weeks of gestation. *Obstet Gynecol*. Jan 2004;103(1):57-62.12.
4. Treger M, Hallak M, Silberstein T, et al. Post-term pregnancy: should induction of labor be considered before 42 weeks?. J Matern Fetal Neonatal Med. Jan 2002; 11 (1):50-3.
5.. Caughey AB, Stotland NE, Washington AE, et al. Maternal and obstetric complications of pregnancy are associated with increasing gestational age at term. Am J Obstet Gynecol. Feb 2007; 196(2):155.e1-6.
6. Norwitz ER, Snegovskikh VV, Caughey AB. Prolonged pregnancy: when should we intervene?. Chin obstet Gynecol Jun 2007; 50(2):547-57.
7. Khan RA, Khan ZE Ashraf O. Concurrent versus sequential methods for labor induction

at term. Int. J.Obstet Gynecol. 2007; 96:94-7.
8. Boulvain M, Stan C, Irion O. Membrance sweeping for induction of labour Cochrane Database sys Rev.2005 Jan 25;(1):CD000451
9. De Miranda E, Van der Bom J, Bonsel G,Bleker O,Rosendaal F. Membrane sweeping and prevention of post term pregnancy inlow risk pregnancies : a randomized controlled trial. BJOG 2006;113:402-8
10. Tan PC, Jacob R, Omar SZ A randomized controlled trail fo membrane sweeping at initiation of formal labour induction obstet Gynecol Mar 2006;107: 569-77
11. Begum I, Khan A, Khan S. out come of previos caesarean section. Pak J Med Res. 2004; 43(3)
12. Hafeez M,Talib W, Siddique S.Induction of labour;comparison of efficacy of different methods.Professional Med J Mar 2007;14(1):150.
13. National Institute for Health and Clinical Excellence. Induction of Labour. NICE Clinical Guidelines 70 (2008) London: National Collaborating Centre for Women's and Children's Health.
14. Hayman R. induction of labour. Obstetrics and gynaecology; an evidence-based text for MRCOG. International student's edition: Arnold publishing, p331.
15. Boulvain M[1], Fraser WD, Marcoux S, Fontaine JY, Bazin S, Pinault JJ, Blouin D. Does sweeping of the membranes reduce the need for formal induction of labour? A randomised controlled trial:Br J Obstet Gynaecol. 1998 Jan;105(1):34-40.
16. 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. Eur J Obstet Gynecol Reprod Biol 1996;66(2): 129– 132