

ORIGINAL ARTICLE

EFFECTIVENESS OF SWEEPING OF MEMBRANES IN INITIATING LABOUR IN PREVIOUS CAESAREAN SECTION AT TERM

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ABSTRACT

SOURCE: Department of Obstetrics and Gynaecology, PGIMER, Chandigarh. **OBJECTIVE:** To estimate the effectiveness of sweeping of membrane(s) in initiation of labour in women decided for VBAC. **METHOD:** Sixty four gravidas with previous caesarean section willing for VBAC at 39 weeks gestation, who were attending an antenatal clinic and planned to deliver at PGIMER Hospital in Chandigarh, were assigned randomly to one of two groups. One group had pelvic examinations at recruitment only to assess pelvic adequacy, and the other also had membrane stripping, at 39 weeks gestation and again at 40 weeks if not gone into labour. Outcome measures included the proportion of patients who had spontaneous onset of labour, number of successful VBACs, days from the first examination to delivery, incidence of postdated pregnancy (>40 weeks), and maternal and fetal complication. **RESULTS:** 27 of 33 patients in study group (81.8%) and 19 of 31 (61.3%) in the control group had spontaneous onset of labour which was statistically significant ($p = 0.0414$). The rate of vaginal delivery in the study group was 63.6% compared with 45.2% in the control group. Proportionally more number of women in the study group delivered before 40 weeks in the study group (69.7% vs 58.1%). The rate of vaginal delivery in those beyond 40 weeks POG in the study group (70%) was statistically significant than in control group (33%). There was no significant difference in maternal or neonatal complications. **CONCLUSION:** Stripping of membranes is safe and effective in initiating labour in cases of previous caesarean section at term

Keywords: Sweeping of membranes, Caesarean.

1. INTRODUCTION

In the recent years, there has been a tremendous rise in the number of caesarean deliveries¹. Contributing to this rise is the decline in vaginal birth after caesarean section (VBAC). Caesareans are associated with greater blood loss, longer recovery, postpartum infections, thromboembolic events, rehospitalizations, increase in incidence of placenta previa and accreta in subsequent pregnancies^{2,3,4,5}. VBAC is associated with decreased maternal morbidity and a decreased risk of complications in future pregnancies. The success rate of trial of vaginal delivery (VBAC) is consistently high ranging from 72-76%⁶. The rate of VBAC failure following spontaneous onset of labour is around 19% while following induction of labour it is 33%⁷. The various formal modes of induction of labour are associated with increased VBAC failure and other adverse effects⁸. Hence it appears that spontaneous onset of labour favours a successful VBAC besides minimising the associated complications like uterine rupture.

According to Cochrane database, sweeping of membranes has the potential to increase the rate of spontaneous onset of labour⁹. Sweeping of membranes appears to be an effective, minimally invasive intervention which can increase the incidence of spontaneous onset of labour. Sweeping of membranes can also increase the rate of successful VBAC. In spite of all these merits, there has been a single study on the effect of stripping of membranes in VBAC¹⁰. This provided the impetus for the current randomised control study, which aimed to assess the effectiveness of sweeping of membranes in initiating labour in women with previous caesarean section.

2. METHODOLOGY

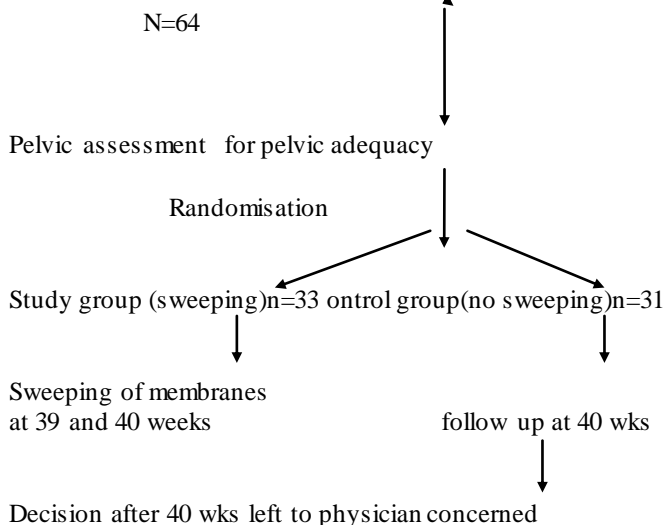
64 women who were attending the antenatal Clinic, PGIMER, Chandigarh, with history of previous one LSCS, with no recurring indication for caesarean section, who were willing for VBAC, with no indication for induction of labour at 39 week POG were recruited. Informed written consent was taken. Following detailed history taking, complete physical examination was done. Subjects were randomised into study and control group. A baseline pelvic examination was done

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in both control and study group at 39 weeks for determining pelvic adequacy and hence confirm the eligibility for VBAC. The subjects in the control group were followed up thereafter. In the subjects in study group, sweeping of membranes was done during the baseline pelvic examination at 39 weeks in the same setting. If the cervix did not admit a finger, massaging around cervix in the vaginal fornices was done. The subjects were informed to report any symptoms like pain abdomen, leaking, bleeding, fever or any discomfort following the procedure. The subjects were watched for onset of labour and the subsequent outcome and adverse effect like premature rupture of membranes. If the patient did not go into labour, patient was examined at each visit for maternal and foetal well being. Sweeping of membranes was repeated at 40 weeks. If the subject did not go into labour at 40 weeks period of gestation, further decision regarding the management including the termination of pregnancy was left to the discretion of the physician concerned. The number of women in the study and the control group who went into labour, the onset (spontaneous or induced), the number of successful VBACs, caesarean rate and the adverse outcomes in both groups including febrile morbidity like intrapartum and postpartum fever, postpartum wound or episiotomy site infection, neonatal morbidity like neonatal infection, pneumonia, NICU admission were recorded. The subjects were followed for two weeks in the postpartum period to identify any maternal or neonatal morbidity. In case of premature rupture of membranes, the patient was observed for spontaneous onset of labour for a minimum of 6 hours. In case of failure of onset of labour the decision for mode of termination of pregnancy was left to the physician concerned and the outcome was recorded. Subjects not going into labour within 6 hours were considered as failure of onset of labour.

If patient recruited in the study developed any complications of pregnancy like hypertensive disorders of pregnancy or antepartum haemorrhage requiring termination, the same was recorded. If the patient in the control or the study group developed any febrile morbidity, the clinical data was recorded and further management as per the concerned physician and microbiological studies, if done were recorded. The statistical analysis was carried out using Statistical Package for Social Sciences (SPSS Inc., Chicago, IL, version 17.0 for Windows)

Subjects willing for VBAC who fulfilled inclusion and exclusion criteria recruited at 39 wks



OBSERVATION & RESULTS

The number of subjects in the study group were 33 and the number of subjects in the control group were 31. The mean age of the subjects in the study group was 27.39 years and in the control group was 29.84 years. There was no statistically significant difference in age distribution. The mean interconception interval (interval between previous caesarean delivery and last menstrual period) in the study group was 3.1 years and in the control group was 4.1 years which was not statistically significant. 2(6%) subjects in the study group and none in the control group had previous successful VBAC. All the subjects recruited in the study had unfavourable cervix at recruitment with a Bishop's score of ≤ 5 . 82% subjects in the study group and 84% in the control group had very poor Bishop's score of less than 3. In the study group, sweeping of membranes was done once in 58% of the subjects and twice in 42% of the subjects. Of the 33 women in the study group, os was closed in two and hence massaging around the cervix was done. One of the two women who had massaging around the fornix had augmentation of labour and had a caesarean section for foetal distress and the other had spontaneous onset of labour and an assisted vaginal delivery (forceps delivery) in view of foetal distress. 18% subjects in the study group and 19% subjects in the control group had premature rupture of membranes. There was no statistically significant difference in the incidence of premature rupture of membranes in both the groups. Onset of labour is defined as appearance of uterine contractions of at least 3 in ten minutes with or without cervical changes. In the study group, 27(81.8%) of the 33 subjects had spontaneous onset of labour while in the control group, 19(61.3%) of the 31 subjects had spontaneous onset of labour.

3 subjects in the study group out of 33(9.1%) and 7 subjects in the control group out of 31(22.6%) had induction of labour. Of the 3 in the study group who had induction of labour, one had induction for premature rupture of membranes, one for postdatism (>40 weeks) and one for impaired glucose tolerance post recruitment. Of the 7 subjects in the control group who had induction, 4 were done in view of postdatism (>40 weeks), one for premature rupture of membrane, two for gestational hypertension post recruitment.

3 in the study group (9.1%) and 5 in the control group (16.1%) (7 unwilling for induction and one for suspected macrosomia) had elective LSCS before onset of labour.

Of the 33 subjects in the study group, 21(63.6%) had vaginal delivery and 12 (36.4%) had caesarean section. Of the 21 subjects in the study group who had vaginal delivery, 5 had instrumental delivery(23.8%). Of the 31 in the control group, 14(45.2%) had vaginal delivery and 17(54.8%) had caesarean section. Of the 14 subjects who had vaginal delivery in the control group, 3(21.4%) had assisted vaginal delivery.

Of the 33 subjects in the study group, 27 (81.8%) subjects had spontaneous onset of labour. Of which, 18(66.7%) had vaginal delivery and 9 (33.3%) had caesarean section. Of the 8 subjects who needed augmentation with oxytocin 6(75%) had vaginal delivery and 2(25%) had caesarean section. All the 3 subjects who had induction of labour in the study group, had vaginal delivery.

Of the 31 subjects in the control group, 19 (61.3%) subjects had spontaneous onset of labour. Of which, 13 (68.4%) had vaginal delivery and 6 (31.6%) had caesarean section. Of the 31 subjects in the control group, 7 (22.5%) had induction of labour (table 16). Of the 7 who had induction of labour in the control group, one (14.3%) had vaginal delivery and 6 (85.7%) had caesarean section.

Of the 33 subjects in the study group, 10 (30.3%) subjects went beyond 40 weeks period of gestation. Of the 31 subjects in the control group, 13 (41.9%) went beyond 40 weeks period of gestation. Of the 10 subjects who went beyond 40 weeks in the study group, 7 (70%) had vaginal delivery and 3 (30%) had caesarean section. Of the 13 subjects who went beyond 40 weeks in the control group, 3 (23%) had vaginal delivery and 10 (77%) had caesarean section. The number of vaginal deliveries in subjects beyond 40 weeks period of gestation was statistically significant in the control group.

Antenatal complications that occurred in subjects post recruitment were noted. Of the 33 subjects in the study group, 1 (3%) had impaired glucose tolerance, 1 (3%) developed gestational hypertension, 1 (3%) had indeterminate antepartum haemorrhage, 10 (30.3%) went beyond expected date of delivery and 7 (21.1%) had premature rupture of membranes.

Of the 31 subjects in the control group, 2 (6.45%) developed gestational hypertension, 13 (41.9%) went beyond expected date of delivery and 6 (19.35%) had premature rupture of membranes. Sepsis occurred in one (3%) subject in the study group and none in the control group. Single increase in temperature record or fever occurred in 2 (6.1%) in the study group and none in the control group.

Of the 33 subjects in the study group, one patient had a foetus with congenital diaphragmatic hernia and the patient was not willing for caesarean section for foetal indication. The patient had an intrapartum intrauterine foetal death. She had an assisted vaginal delivery in view of prolonged second stage of labour. Of the rest 32 in the study group, 2 neonates had jaundice and 2 had respiratory distress, but none had an apgar less than 7 at 5 minutes.

Of the 31 in the control group, 2 neonates had jaundice, one had fever and one had respiratory distress and none had an apgar less than 7 at 5 minute.

4. DISCUSSION

In our study, sweeping of membranes in women with previous caesarean section has increased the rate of spontaneous onset of labour. The rate of spontaneous onset of labour in the study group was 81.8% compared with 61.3% in the control group which was statistically significant. This was in contrast to the study from the University of Malaysia¹⁰, where serial membrane sweeping did not increase the rate of spontaneous onset of labour in women who planned VBAC. Wiryasirivaj *et al* also showed that sweeping of the membranes was effective in promoting the onset of labour¹¹. McColgin *et al* showed a significant increase in the number of women who either delivered or went into spontaneous labour within one week after stripping of membranes¹².

According to Cochrane database, sweeping of membranes has the potential to increase the rate of spontaneous onset of labour and thus preventing formal induction of labour with either oxytocin, prostaglandin or amniotomy in primigravida and multiparous ladies without prior caesarean deliveries¹³.

Overall rate of successful VBAC in our study was 54.7%. The rate of vaginal delivery was 63.6% in the study group and 45.2% in the control group which did not reach statistical significance probably due to smaller sample size. In the study from Malaysia¹⁰ the vaginal delivery rate was 59.8% in the study group and 58% in the control group. The rate of previous VBAC in our study group was only 6%, while in the Malaysian¹⁰ study the rate of previous VBAC in the study group was 21.3%. Hence compared to the Malaysian study¹⁰, though the rate of previous VBAC (which is considered to positively influence the number of vaginal deliveries) was low in our study group (21.3% vs 6%), the rate of successful vaginal delivery was more (59.8% vs 63.6%).

In our study, the vaginal delivery rate following spontaneous onset of labour was 66.7% in the study group and 68.4% in the control group. However, following induction of labour, all the subjects in the study group and 14.3% subjects in the control group had vaginal delivery which was statistically significant. This was in contrast to the study by Donagh MS where the onset of labour, if spontaneous was found to favourably influence success of VBAC compared to induction of labour⁸. Also Lamda MB found the rate of VBAC failure following spontaneous onset of labour to be around 19% while following induction of labour it was 33%⁷. The increase in vaginal delivery rate following induction of labour might signify the cumulative effect of sweeping of membranes and oxytocin in those patients. In women who were induced, all in the study group and 14.3% subjects in the control group had vaginal delivery which was statistically significant. Proportionally less number of subjects in our study went beyond 40 weeks in the study group though it was not statistically significant (30.3% vs 41.9%). These findings were similar to the Cochrane meta analysis of 22 membrane sweeping trials with conclusion of reduced duration of pregnancy with RR 0.59 of pregnancy continuing to beyond 41 weeks⁹. McColgin *et al* also found a significant reduction in the incidence of post-term pregnancy beyond 294 days (3.3% vs 15.6% in controls)¹².

Though the overall vaginal delivery rate following sweeping of membranes was not significant in the study group, when analysed alone, vaginal delivery rate beyond 40 weeks was significantly more in the study group. It is implied that subjects beyond 40 weeks period of gestation in the study group had stripping of membranes twice. It is possible that they had the additive effect of second stripping of membranes which could have enhanced the vaginal delivery.

There was no uterine rupture in the study group in our study. In the study by Lamda MB⁷ the rate of uterine rupture was 36 per 1000 following spontaneous onset of labour and 102 per 1000 following induced labour. The decrease in rate of induction of labour and increase in spontaneous onset of labour following sweeping of membranes as seen in our study, might contribute to reduction in rate of uterine rupture.

.Neonatal complications were similar in both the groups similar to the Malaysian study¹⁰

5.CONCLUSION

In conclusion, sweeping of membranes which is an intervention with virtually no cost can increase the rate of spontaneous onset of labour in women with previous caesarean section without increasing maternal or foetal complications. Sweeping of membranes can be an effective tool with almost no cost and virtually without any complication which can enhance spontaneous onset of labour and significantly decrease the morbidity and mortality associated with repeat elective caesarean section and intrapartum caesarean section following onset of labour. Probably the chances of vaginal delivery for those who need induction of labour are also likely to be better following stripping of membranes.

Though the rate of spontaneous onset of labour was statistically significant in the study group it was not translated into statistically significant number of vaginal deliveries.vaginal delivery rate beyond 40 weeks was statistically significant. It is possible that these subjects had the additive effect of second stripping of membranes which could have enhanced the vaginal delivery rate. Probably it also needs further evaluation to see if decreasing the interval between two procedures of sweeping of membranes from one week to 4 days or starting sweeping of membranes earlier to 39 weeks can optimise the outcome better. If these findings can be confirmed in larger studies, sweeping of membranes can be brought into routine practice in women with previous caesarean section to optimise their outcome without increasing complications.

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