Delivery After One Previous Caesarean Section – One Year Prospective Study

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Summary:

One year prospective study of delivery after one previous caesarean section has been done. Out of 315 women with previous one caesarean section, 204 (64.2%) were selected for trial of labour. Out of these 204 women, 138 (67.6%) delivered vaginally and 66 (32.4%) underwent repeat caesarean section. Relative importance of different factors which affect the mode of delivery has been analysed and the safety of vaginal birth after caesarean section evaluated. An attempt has also been made to reappraise the policy of selection for trial of labour with the aim of improving the vaginal birth rate after caesarean section.

Introduction

One of the most important changes in the operative obstetrics during the past three decades has been the tremendous increase in the use of caesarean delivery. The reasons for increased caesarean section rates are multifactorial, but a recent analysis of caesarean birth epidemic concluded that the practice of elective repeat caesarean section for patients with previous caesarean delivery has been the major contributor to the escalation in the total caesarean section rate. (Porreco and Thorp, 1996).

For many years, the scarred uterus was believed to contraindicate labour out of fear of uterine rupture. In the past 15 years, however, there has been ample proof of the relative safety for a trial of labour in most women after a low-transverse caesarean. Efforts to encourage vaginal birth after caesarean (VBAC) appear to be the most productive approach to lowering the caesarean rate (Demuylder and Thiery, 1990; Porreco 1990, Pridjian et al, 1991). Inspite of documented safety of VBAC the percentage of women delivered vaginally after previous caesarean section varied from mere 19.5% in the United States to 52.9% in Sweden during the year 1990 (Notzon et al, 1994) clearly showing difference of opinion amongst obstetricians.

Selection of women for trial of labour with previous caesarean section and the success of trial depends upon the factors related to the previous and current pregnancy. In this prospective study, the relative importance of these different factors has been analysed with the aim of analysing our policy of trial of labour in

women with previous one caesarean section. An attempt has also been made to establish the safety of VBAC for both mother and the foetus.

Subjects

The present study was conducted from 01.06.97 to 31.05.98 in the department of Obstetrics and Gynaecology of Tata Main Hospital, Jamshedpur, which is a regional referral centre. Our departmental policy is to do elective caesarean section after previous two or more caesarean deliveries and select women for trial of vaginal delivery after previous one caesarean section. Induction of labour in the second group is considered by amniotomy, if cervix is favourable (Bishop Scoure ≥ 4), followed by oxytocin infusion. Prostaglandin is not routinely employed for induction in this group.

Selection of women for trial of vaginal delivery is done after considering the place and details of previous caesarean section, any complication during current pregnancy, foetal presentation and ultrasound assessment of foetal weight. Pelvic assessment is usually done at the onset of labour or before induction of labour. Careful clinical assessment of mother and foetus during labour is supplemented with intermittent electronic foetal heart monitoring. Oxytocin is used both for induction and augmentation of labour with close observation. Intrauterine pressure monitoring is not done in this hospital. Epidural analgesia during labour is not in practice and routine prophylactic forceps are not employed. Uterine cavity is not explored for integrity of scar after vaginal birth.

Common exclusion criteria for trial of vaginal delivery are clinical cephalo-pelvic disproportion during this pregnancy, post datism with cervix unfavourable for amniotomy (Bishop score < 4), breech presentation, hypertension, meconium stained liquor in early labour, bad obstetric history and intrauterine growth retardation (IUGR).

Observations

During the study period of one year we had 6160 deliveries with overall caesarean section rate of 16.5% and primary caesarean section rate of 13.6%. Out of 318 women with previous one low-transverse caesarean section, 204 (64.2%) were selected for trial of labour. Out of these 204 women, 138 (67.6% delivered vaginally and 66 (32.4%) underwent repeat caesarean section. Overall incidence of vaginal birth after previous one caesarean was 43.8%.

Table I shows distribution of indications for previous caesarean section and rates of subsequent vaginal birth. Women with previous caesarean section for non-recurrent indications like breech, hypertension antepartum haemorrhage and foetal distress are understandably more likely to have vaginal birth during subsequent pregnancy. VBAC rates after previous failed induction and failure to progress have also been impressive. This suggests that factors like inefficient uterine contractions and foetal malposition might have operated during first delivery.

Table I
Distribution of Indication for Primary Caesarean Section and Corresponding VBAC rate (Total 204)

Indication of Primary Caesarean	No. of Women	VBAC
Failure to Progress	54	31 (57.4%)
Foetal Distress	47	28 (59.6%)
Hypertension	31	26 (83.9%)
Breech Presentation	27	23 (85.2%)
Failed Induction of Labour	28	18 (64.3%)
Antepartum Haemorrhage	8	6 (75.0%)
Intrauterine Growth Retardation	5	2 (40.0%)
Foetal Macrosomia	3	1 (33.3%)
Twin Pregnancy	1	1 (100%)

Table II shows chances of success of trial of labour in relation to cervical findings at the onset of labour. Chances of vaginal delivery in women with spontaneous labour / PROM are appreciably low if initial cervical findings are not favourable – only 9% vaginal birth versus 75% with favourable cervix.

Table II
Success of Trial of Labour in relation to Cervical Findings at the onset of Labour

Cervical Findings	No. of Women	VBAC
Poor		
Effacement < 50%		
Dilatation < 2 cm	22	2 (9.1%)
Head Station –2 or above		
Good		
Effacement ≥ 50%		
Dilatation ≥ 2 cm	182	136 (74
Head Station below –2		

Table III shows influence of previous vaginal delivery on the trial of labour. There are more chances of VBAC (84.8%) in women with history of previous vaginal delivery compared to ones without (62.7%). The difference is statistically very significant ($p < 0.01$).

Table III
Success of trial of Labour in Relation to Previous Vaginal Delivery (Total 204)

Previous Vaginal Delivery	Total No. of Women	VBAC
Yes	46	39 (84.8%)
No	158	99 (62.7%)

Table IV shows rates of VBAC in relation to birth weight. Chances of vaginal birth decrease as foetal weight crosses 3500 g.

Table IV
Success of Trial of Labour in relation to Birth Weight

Birth Weight in gram	No. of babies	VBAC
≤ 3500	194	135 (69.6%)
> 3500	10	3 (30%)

P<0.05, statistically significant

There was no difference in outcome between women who were in spontaneous labour and women who received oxytocin for induction or augmentation of labour as shown in Table V.

Table V
Outcome in Spontaneous and Oxytocin induced Labour

	No. of Women	VBAC
Spontaneous Labour	162	109 (67.3%)
Oxytocin Induction	42	29 (69%)

In spontaneous labour group there were two cases of uterine scar dehiscence which were picked up early and both the babies were delivered in good condition by prompt caesarean section. There was a case of uterine scar rupture in oxytocin group. This grand multiparous patient was admitted with accidental haemorrhage and intrauterine death. Amniotomy was followed by oxytocin augmentation of labour when uterine rupture resulting in hypovolemic shock occurred. She underwent laparotomy and repair of rupture, suffered severe hypotension during surgery and was kept on ventilator for 48 hrs after operation. She was discharged home well. This gives an incidence of 1.5% of scar dehiscence in this series. One patient suffered morbidity and there was no maternal death.

As shown in Table VI trial of labour didn't carry any additional risk to the foetus. Neonatal deaths and higher incidence of low Apgar score in the elective caesarean section group were because of high risk foetuses in this group. There was no perinatal mortality in trial of labour group of women.

Table VI
Foetal Outcome in Women with Previous One Caesarean Section

	5 min. Apgar score < 7	Neonatal Death
Elective Repeat Caesarean (No. 114)	9 (7.9%)	2 (1.8%)
Trial of Labour (No. 204)	6 (2.9%)	NIL

Discussion and Conclusion

Caesarean section rate can be most effectively stabilised or lowered by careful attention to the indication of primary caesarean section. After one caesarean, wider acceptance of the vaginal birth is necessary to keep this rate at reasonable level. This is possibly more pertinent in Indian society where couples opting for third child are common.

In this prospective study of one year, various factors contributing to the outcome of trial of labour after caesarean section have been studied. Overall incidence of vaginal birth in women with previous one caesarean section was 43.4% which is lower than VBAC rate in Sweden (52.9%) but higher than that in United States (19.5%), as reported for the year 1990 (Notzon et al, 1994). VBAC rates in some of the Indian studies varied from 32.5% to 60% (Singhal, 1992).

These rates are expected to improve with liberal policy of trial of labour. Successful vaginal delivery in the trial of labour group was achieved in 67.6% of women. This is in accordance with the results found in other studies, which report success rate ranging from 50% to 80% (Phelan et al, 1987; Rosen & Dickinson, 1990; Flamm et al, 1990). Our repeat caesarean section rate in trial of labour group was 32.4% compared to 13.6% of primary caesarean section rate.

In cases where primary caesarean section was done for breech or hypertension, 15.5% rate of repeat caesarean section is comparable to primary caesarean section rate of 13.6%. Incidence of repeat caesarean section in the subgroup where primary caesarean section was done for foetal distress was 40.1% compared to an average of 24% in other published reports (Cunningham et al, 1997). This merits further study.

In cases of dystocia (failed induction and failure to progress) during previous delivery, our repeat caesarean section rate of 35.9% seems appropriate and compares well with other studies (Cunningham et al, 1997).

Two important variables clearly brought out in this study are good cervical findings at the onset of labour and previous vaginal delivery. Both strongly favour the successful outcome of trial of labour. These results are consistent with the findings of Silver and Gibbs (1987) and Rosen and Dickinson (1990). If ultrasound estimation of foetal weight is more than 3.5 kg., chances of vaginal birth are only 30% in the presence of other favourable factors. This is an important point against trial of labour.

The incidence of uterine scar dehiscence was 1.5%. This has been reported to vary from 0.3% to 1.7% in other studies (Lavin et al, 1982; Nielsen et al 1989; Flamm et al. 1990). Two important prerequisites for trial of labour in women with previous abdominal delivery are regular monitoring during labour and facilities for immediate caesarean section, if need arises. Uterine scar dehiscence in both the cases in spontaneous labour group was suspected because of sudden foetal heart rate deceleration and, timely intervention prevented any foetal or maternal morbidity. In this situation, foetal loss may not be always avoidable although maternal outcome is consistently good. Uterine rupture in the oxytocin group was complicated by accidental haemmorrhage and intrauterine death. There was some delay in the diagnosis which further compounded morbidity. This was perhaps avoidable. Uterine scar dehiscence is related to the healing after previous caesarean section and the strength of resultant scar. Although its incidence is low, it can't be avoided inspite of best possible care. This should be explained to the patient before trial of labour.

Oxytocin infusion, if appropriately given, doesn't increase the risk of trial of labour. This possibly strengthens the argument in favour of prostaglandin instillation for cervical ripening and induction of labour (Chez, 1995).

Foetal outcome was not affected by trial of labour. We had excellent results with no perinatal mortality in this group. Bad obstetric history due to intrapartum factor contra-indicates trial of labour. If such factor is not responsible for previous neonatal morbidity or loss, vaginal delivery can be considered. Similarly meconium stained liquor as an indication for caesarean section should be considered only to the extent it would be considered in women without caesarean section. Previous caesarean section should not make breech delivery more unsafe and trial of labour may be considered in selected women.

Regular review of the selection criteria for trial of labour in women with previous caesarean section will increase the scope of VBAC and help lower the overall caesarean section rate in institutions.

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