



Original Research Article

A study of the determinants of success of trial of labour after cesarean (TOLAC) in a tertiary centre of Haryana

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ABSTRACT

Introduction: Cesarean section rate has been on a continuous rise since 1970. When trial of scar is done, 30- 80% of women with one previous lower segment caesarean section can achieve vaginal delivery. Identification of the determinants of the success of TOLAC help in selecting the patients with favorable factors and hence improving the success rate of TOLAC with minimum possible complications.

Materials and Methods: This study was planned from January 2015 to December 2015. Case files of previous one cesarean pregnancies were reviewed retrospectively in two groups: VBAC group and RCS group.

Results: There were 9.8% (N=488) previous one cesarean pregnancies out of which 67% (327) underwent TOLAC. VBAC happened in 71.56% and RCS in 28.44%. Malpresentation, fetal distress, CPD and Failed induction were the indications of primary cesarean which had significantly more number of VBAC as compared to RCS (p value <0.05). There was statistically significant difference in the two groups when the spontaneous onset of labour was compared to induced labour. The mean admission bishops score of VBAC group was 6.95±2.72 and that of RCS group was 3.87± 2.54 (p value- 0.000). Also the mean birth weight of the VBAC group was 2.66±0.53 and that of RCS group was 2.80±0.47 (p value- 0.027).

Conclusion: Malpresentation, fetal distress, CPD and failed induction are the most important indications of primary cesarean section which have better chances of VBAC. Spontaneous onset of labour, admission bishops score and birth weight has significant affecton the outcome of TOLAC.

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1. Introduction

The rise in cesarean delivery rate has become a matter of great concern to the world. This has led not only to rise in life threatening complications like placenta accreta/percreta and rupture uterus but has also become a burden on the health systems especially in developing countries. According to the 4th NFHS 2015-2016 survey, the present caesarean section rates in India are quite variable, ranging from 6.2% in state of Bihar to unacceptably high of 58% in state of Telangana.¹ The cesarean delivery rates of United States for the year 2016 are similarly high 31.9%.² These are far beyond the optimal rates of 10-15% recommended by WHO.³ VBAC is surely an attractive alternative to RCS, but this too is not 100% safe because there is a 0.2-1.5% risk

of uterine rupture with very high fetal mortality and high maternal morbidity.⁴ There are few prediction models like one developed by Grobman et al but as of now there is no worldwide accepted criteria to select patients for TOLAC and there is a wide scope of research.⁵

2. Material and Methods

Approval from the institutional scientific and ethical committee was sought and a retrospective study of the file records of the patients of previous one cesarean section delivered at our facility was done.

Two groups were made:

1. VBAC (vaginal birth after cesarean) group.
2. RCS (repeat cesarean section) group.

As per standard operating protocol for management of previous one cesarean section, the patients had undergone

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TOLAC with the following inclusion and exclusion criteria.

2.1. Inclusion criteria

Singleton pregnancy, cephalic presentation, Hb \geq 8 gm%, informed and written consent for TOLAC, interconceptional period more than 18 months and adequate pelvis.

2.2. Exclusion criteria

Previous one cesarean pregnancy with any complicating factors.

Patients with no other high-risk factor were allowed to go till 40 weeks and induction of labor was done at completed 40 weeks with dinoprostone gel. Patients and the family members of the TOLAC groups were counseled regarding the advantages and disadvantages associated of success as well as failure. Admission CTG was done for all patients and progress of labour was monitored with a partograph and CTG. Clinical signs of scar dehiscence and rupture with the vitals monitoring, vaginal bleeding, abnormal CTG and scar tenderness were looked for.

The data was fed into Microsoft excel sheets. The incidence of previous one cesarean pregnancies, the TOLAC rate and VBAC rate were calculated. Factors like age, parity, indication of primary cesarean, history of previous vaginal delivery or VBAC, mode of onset of labour, admission bishop's score, interval between 2 cesareans and birth weight were studied. Chi square test and t test were applied for comparisons among the groups using SPSS 20.

3. Results

There were 9.8% (n=488) previous one cesarean pregnancies out of which 67% (n=327) underwent TOLAC. VBAC happened in 71.56% (n=234) and RCS in 28.44% (n=93).

The results are depicted in the table given below. In VBAC group, the mean age of the patients was 25.54 ± 3.11 years (range 20-40 years) and that in RCS Group was 25.15 ± 2.02 years (range 22-32 years) and there was no statistical difference in the two groups (p value=0.267). The mean parity of VBAC group was 1.35 and that of TOLAC group was 1.22 (p value=0.110). In both the groups majority of patients were para one (81.7% in RCS Group and 73.5% in VBAC Group). Malpresentation, fetal distress, CPD and failed induction were the indications of primary cesarean which had significantly more number of VBAC's as compared to RCS (p value <0.05). Whereas NPOL, APH and Preeclampsia had similar outcome, as there was no statistically significant difference between the two groups (p value >0.05). There was no statistically significant difference when history of VBAC or history of previous normal vaginal delivery was compared between the two groups (p value for VBAC=0.788 and p value for previous vaginal delivery=0.125). There was statistically significant difference in the two groups when the spontaneous onset

of labour was compared to induced labour (p value=0.001). The mean interconceptional period in VBAC Group was 38.73 ± 17.95 months and in RCS Group was 38.76 ± 20.26 months and the difference was also not statistically significant (p value=0.989). The mean admission bishops score of VBAC group was 6.95 ± 2.72 and that of RCS group was 3.87 ± 2.54 (p value= 0.000). Also the mean birth weight of the VBAC group was 2.66 ± 0.53 and that of RCS group was 2.80 ± 0.47 (p value= 0.027). Admission bishop's score of ≥ 4 and birth weight of ≤ 3 kgs was statistically significantly associated with more cases of VBAC as compared to RCS. There was no maternal mortality, one fresh stillbirth in RCS group and 7 neonatal mortalities including both the groups.

4. Discussion

The literature shows that the success rates of TOLAC varies from 60-80%.⁶ This study has depicted the factors that determine the results of TOLAC. In our study the most important factors favoring success of TOLAC are the spontaneous onset of labour and admission bishops score of ≥ 4 . Hence these patients deserve a fair trial of TOLAC. This is in accordance to other studies like that by Flamm and Geiger, who found that a dilatation more than 4 cm and effacement more than 25% on admission were significantly more likely to have VBAC compared with those with lesser dilatation and effacement.⁷ Similarly Senturk et al also showed in their study that cervical dilation and effacement were significantly with the success of VBAC (odds ratio [OR]: 2.056 and 1.106, respectively).⁸ Most of the studies have talked about the dilatation and effacement but we have depicted the bishops score as a whole because it includes both of them and other factors like consistency, position of cervix and station of head as well which also have significant role in the labour progress and outcome.

Over the years different authors like Caughey, Brill and Hendler et al have shown that a prior vaginal delivery is associated with a higher rate of successful VBAC compared with patients with no prior vaginal delivery.⁹⁻¹¹ But in our study the previous history of vaginal delivery or even VBAC was not associated with VBAC (p value 0.125 and 0.788 respectively). The reason may be because in both the groups most of the patients were para one (81.7% in RCS Group and 73.5% in VBAC Group). Hence this factor needs to be studied in a population with higher parity. They also emphasized that interconceptional period more than two years had significantly higher success rates of VBAC (P<0.01), but no such association was found in our study as all our patients had interval more than 18 months.

Brill and Windrim in their article described the impact of various factors on outcomes when VBAC was attempted. They concluded that breech presentation or fetal distress, were associated with a much higher successful VBAC rate than other indications. Similarly in our study also

Table 1: Tabular presentation of determinants

| Demography | RCS (N-93) | VBAC(N-234) | P value |
|---|------------------------------|-------------------------------|---------|
| Mean age ($\pm 2SD$) (Range) | 25.15 (± 2.02) (22-32) | 25.54 (± 3.11) (20-40) | 0.267 |
| Mean parity | 1.22 | 1.35 | 0.110 |
| Mean admission bishops score | 3.87 \pm 2.54 | 6.95 \pm 2.72 | 0.000 |
| Mean interconceptional period (months) | 38.73(\pm 17.95)(18-96) | 38.76 (\pm 20.26) (18-144) | 0.989 |
| Mean birth weight ($\pm 2SD$) (Range) | 2.80(\pm 0.47) | 2.66(\pm 0.53) | 0.027 |
| Indication of primary cesarean | 17 | 73 | 0.018 |
| Malpresentation | 27 | 44 | 0.043 |
| Fetal distress | 18 | 46 | 0.950 |
| NPOL | 0 | 10 | 0.043 |
| CPD | 17 | 14 | 0.001 |
| FI | 3 | 10 | 0.662 |
| PIH | 5 | 6 | 0.203 |
| APH | | | |
| Previous normal vaginal delivery | 14 | 53 | 0.125 |
| Previous VBAC | 3 | 9 | 0.788 |
| Birth weight \leq 3kg | 65 | 196 | 0.005 |
| Birth weight $>$ 3kg | 28 | 38 | |
| Spontaneous onset of labour | 51 | 174 | 0.001 |
| Induction of labour | 42 | 60 | |
| Bishops score \geq 4 | 50 | 204 | 0.000 |
| Bishops score $<$ 4 | 43 | 27 | |
| Interpregnancy interval \leq 2 years | 24 | 68 | 0.555 |
| Interpregnancy interval $>$ 2 years | 69 | 166 | |

malpresentation, fetal distress, CPD and failed induction were the indications of primary cesarean which had significantly more number of VBAC's (p value $<$ 0.05).¹¹

Grobman et al devised models for predicting success of TOLAC with the factors available at first visit till the admission for delivery but they didn't include birth weight in that which has a significant impact on the success of TOLAC.⁵ Also the models are cumbersome to use and hence further research is needed for making easier prediction models.

5. Conclusion

Malpresentation, fetal distress, CPD and failed induction are the most important indications of primary cesarean section which have better chances of VBAC. Also spontaneous onset of labour, admission bishops score and birth weight has significant affect on the outcome of TOLAC.

6. Source of funding

None.

7. Conflict of interest

None.

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