Original Research Article

Safety and perinatal outcome of trial of vaginal delivery after previous cesarean section - A study of 400 cases

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Abstract

Background: The National Institutes of Health Consensus Conference established that vaginal birth after cesarean section is an 'acceptable choice.' The recent dip in VBAC is due to various reports that have highlighted an increase in both maternal and fetal risks with VBAC including uterine rupture and perinatal deaths. Options available for woman with one previous cesarean section are either planned repeat cesarean section or trial vaginal delivery. In the present study we have attempted to look at the safety and perinatal outcome of VBAC after previous cesarean section. **Aim of the Study:** To compare the maternal morbidity in Vaginal births after cesarean sections (VBAC) with that of planned repeat caesarean sections and to study the perinatal outcome. **Materials and Methods:** A total of 400 women who had undergone previous caesarean section were selected for VBAC. Detailed clinical history was taken and examination was done. In intrapartum period close maternal and fetal monitoring was done. Oxytocin was used only for augmentation of labour. Maternal complications and perinatal outcome was noted. The study period was between January 2017 to September **Observations and Results:** A total of 14587 deliveries were conducted in the study period. Of these, vaginal deliveries were 10286 (70.5%) and lower segment cesarean sections (LSCS) were 4152 (29.6%).Gravida-2 women were 67.2%.Favorable cervical findings at the time of VBAC were present in 78.5% women. The scar dehiscence rate was 1.4%. Neonatal deaths were 0.5% and stillbirths were 1%. **Conclusion:** Vaginal birth after cesarean section (VBAC) can be integrated as a safe and acceptable option in all tertiary care centres and teaching hospitals. The scar dehiscence rate in our study was 1.5% which could be further reduced by better selection of cases. Favorable cervical score, average birth weight, smooth progress of labor, less need for augmentation of labor are indicators of a successful VBAC.

Key Words: VBAC, LSCS, Perinatal outcome in VBAC.

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INTRODUCTION

In 1916, Edward Cragin's statement "once a cesarean always a cesarean" became popular though originally it was mentioned to reduce the primary cesarean rate.[1] The turning point came in1980 when the National Institutes of Health Consensus Conference established that vaginal birth after cesarean section is an 'acceptable choice' leading to increase in the rate of vaginal birth after cesarean section (VBAC). The NIHCC reiterated in 2010 that based on the available evidence, trial of labour is a reasonable option for many pregnant women with one prior low transverse uterine incision and has important risks and benefits and that these risks and benefits differ for the woman and her fetus[2] Trial of labour (TOL) after Cesarean section should be considered in women who have no contraindications after appropriate discussion. The efficacy and safety of a TOL after cesarean in a hospital where facilities for repeat cesarean are available is well accepted. Intrapartum close maternal and fetal monitoring in TOL women is recommended and so is the

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use of oxytocin for augmentation of labour.[3] The American College of Obstetricians and Gynecologists (ACOG) consensus statement supporting vaginal birth after cesarean section as "safe and acceptable care option" was given.[4] The recent dip in VBAC is due to various reports in literature that have highlighted an increase in both maternal and fetal risks with VBAC including uterine rupture and perinatal deaths.[5,6] Options available for woman with one previous cesarean section are either planned repeat cesarean section or trial vaginal delivery. Complications of repeat cesarean section are damage to bladder, bowel, adhesions, placenta accreta, percreta, placenta previa, wound infection, dehiscence, paralytic ileus, increased respiratory morbidity, and complications in the neonate.[7] Complications of trial vaginal delivery include scar rupture or scar dehiscence. Also still birth, intra uterine fetal death, hypoxic ischemic encephalopathy, perinatal morbidity and need for emergency cesarean section with its attendant morbidity have to be kept in mind.

AIM AND OBJECTIVE

To compare the maternal mortality and morbidity in vaginal births after cesarean sections (VBAC) with that of planned repeat caesarean sections and to study the perinatal outcome.

MATERIALS AND METHODS

This was a prospective study conducted at Government Maternity Hospital, Osmania Medical College Hyderabad, Telangana, over a period of nine months from January 2017 to September 2017.

Inclusion Criteria

1. Single cesarean section (lower segment transverse)
2. Cephalic presentation
3. No other obstetric and medical complications, (preferably)

Exclusion Criteria

1. More than 1 previous cesarean section
2. Vertical T or unknown uterine incision
3. Previous uterine rupture
4. Previous uterine surgery including hysterotomy or previous myomectomy.
5. Previous uterine perforation
6. Cases with cephalo-pelvic disproportion (CPD)

Complete clinical details of the patients were noted including history, place of surgery, last child's age, type of incision, any obstetric or medical complication, examination findings, fetal presentation, pelvic assessment, relevant investigations. In intrapartum period, intermittent electronic fetal heart rate monitoring was done, maternal pulse rate monitoring was done and oxytocin was used only for augmentation. Care was taken not to use any intrauterine pressure or routine prophylactic forceps and also scar exploration after delivery was withheld. The parity of the patients who had VBAC, the indications for previous cesarean section, cervical score, the parity and VBAC, special maternal conditions, perinatal outcome in VBAC were studied.

OBSERVATIONS AND RESULTS

A total of 14587 deliveries were conducted in the study period. Of these, the vaginal deliveries were 10283 (70.5%) and lower segment cesarean sections (LSCS) were 4317 (29.6%). Primary cesarean sections were 2106 in number and the rate of primary LSCS was 14.4%. According to the set criteria, 400 patients were included for VBAC.

Parity of the patients with VBAC: There were 400 patients with VBAC having the following parity status: Gravida-2 were 269 (67.2%), gravida-3 were 103 (25.7%), gravida -4 were 22 (5.7%), gravida-5 were 4 (1.2%) and least number were gravida-6 ie only 2 (0.5%) patients.

Place of cesarean section: Most of the patients, 203 (50.75%) had previous cesarean section at our hospital (GMH) or teaching institutes in their previous pregnancy. 75 (18.75%) patients had previous cesarean in Area Hospitals and 122 (30.5%) had in Private hospitals. There were 203 (50.7%) registered cases and 197 (49.3%) unregistered cases.last child's age was less than 2 years in 77(19.2%) women.

Table 1: Indications for first cesarean section

Indication	No. of cases	Percent (%)
Mal presentation	133	33.2%
Cephalo-pelvic disproportion	61	15.2%
PIH	42	10.5%
Fetal distress	34	8.5%
Oligohydramnios	28	7%
Failed induction	26	6.5%
Unknown	76	19%
Total	**400**	**100%**

This shows that even when the indication for previous LSCS was CPD; it does not preclude the chance of successful VBAC in next pregnancy.

Cervical score and VBAC: Favorable cervical findings at the time of VBAC were present in 314/400 (78.5%) women and unfavorable cervical findings at the time of VBAC were seen in 86/400 (21.5%) women.

Induction of labour and augmentation in VBAC: Induction of labour was not practiced at our institute for VBAC. Augmentation of labour with oxytocin was done with careful monitoring in about 18/400 cases (4.5%). Artificial rupture of membranes was employed as a successful method of augmentation in 44.25% (n=177)

Table 2: VBAC andprevious vaginal deliveries

Number of VBAC	No. of cases	Percent (%)
1st VBAC	310	77.5%
2nd VBAC	77	19.5%
3rdVBAC	9	2.2%
4thVBAC	2	0.5%
5thVBAC	2	0.5%
Total	**400**	**100%**

Maternal complications: There was no maternal mortality. Scar dehiscence or scar rupture leading to emergency laparotomy and abandoning of VBAC was observed in (7/407) women ie in 1.4% cases. Scar dehiscence patients underwent rent repairs and there was no need for hysterectomy.

Birth weights: Varied from 2kg to 2.7 kg. For all except one woman, it was the 1st VBAC. Fetal heart variation was the commonest warning sign. A need for blood transfusions was seen in 15/400 (4%) patients. Retained placenta and atonic postpartum hemorrhage were encountered in 2 cases (0.5%) and 3 cases (0.7%) respectively. Cervical and vaginal tears were seen in 3 (0.7%) cases.

Table 3: VBAC in some special conditions

Special condition	No. of cases	Percent (%)
Pregnancy induced hypertension	48	35.8%
Prior intrauterine fetal death	24	17.9%
Premature rupture of membranes	19	14.7%
Postdated	10	7.4%
Meconium stained liquor	8	5.9%
Anemia	6	4.4%
Breech presentation	5	3.7%
HBSAg positive	5	3.7%
Placental abruption	4	2.9%
Intrauterine growth restriction	3	2.2%
Bad obstetric history	2	1.4%
Grand multipara	2	1.4%
Total	**134**	**100%**

Table 4: Birth weight and Perinatal Outcome

Perinatal Outcome		No. of cases	Percent (%)
Birth weight (n=400)	<1.5 kg	20	5%
	1.6-2 kg	22	5.5%
	2.1-2.5 kg	112	28%
	2.6-3 kg	153	38.2%
	3-3.5 kg	70	17.5%
	>3.5 kg	23	5.5%
NICU care required		53	13.2%
Stillbirths		4	1%
Neonatal deaths		2	0.5%

Corrected perinatal mortality rate was 1.4%.

DISCUSSION

The cesarean section trends in various parts of the world are variable. It is 21.3% in the United Kingdom, 23% in Ireland,[8] 23.3% in Australia,[9] 26% in the United States[10] and 50% in South America.[11] In India, it has been reported as 25% in teaching hospitals.[12] The repeat cesarean section rates in the US are reported as high as 89.4%.[13] There is considerable variation in the success rate of VBAC and is 56% and 80% as per literature.[14]

Cervical score and VBAC: In the present study, favorable cervical findings at the time of VBAC were present in 314 (78.5%) women. Favorable cervical score and descent of head favor vaginal delivery. Other factors that help in VBAC are previous successful VBAC, normal body mass index, higher Bishop's score, spontaneous onset of labour and average baby weight. [15] Slow progress during labour is associated with increased rates of cesarean delivery as demonstrated by limited cervical dilatation on admission.

Maternal Complications: Lydon *et al*[5] reported a relative risk of uterine rupture of 15.6 with prostaglandins, 4.9 with oxytocin and 3.3 among women with spontaneous onset of labor. Major flaw was the use of ICD-9 codes to identify uterine rupture was shown to be only about 40% accurate. Guise *et al* [16] in their systematic review reported the relation between oxytocin and rupture of uterus to be inconclusive. Augmentation of labor with oxytocin and induction of labor regardless of

method were associated with a significantly greater risk of uterine rupture than was spontaneous labor.[17] Rosen *et al*[18,19] observed febrile morbidity in 9.6% patients who were given trial of labour and 17.3% febrile morbidity in those women who underwent repeat elective LSCS. Mozurkewich *et al*[20] observed similar higher febrile morbidity in those who underwent repeat elective LSCS. (4.3% versus 5.5%) Uterine rupture and /or dehiscence were reported by Rosen *et al*[18,19] as 1.8/100 and 1.9/100 in women who underwent trial of labour and repeat elective LSCS respectively. Mozurkewich *et al*[20] observed a slightly higher incidence of 3.9/1000 for trial of labour patientsas compared to 1.6/1000 for repeat LSCS patients. Guise *et al*[16] and Dodd *et al*[21] reported 2.7/1000 and 1.2/100 rate of uterine dehiscence in women who underwent trial of labour.

Maternal Death: In our study there was no maternal death for the VBAC women. Rosen *et al*[18,19] reported 2.8/1000 maternal deaths for women who underwent trial of labour/VBAC and 2.4/1000 for LSCS group. Mozurkewich *et al* [20] and Dodd *et al* [21] found no maternal mortality in either group.

VBAC in some special conditions:

Perinatal Outcome: In our study, the perinatal mortality rate was 1.4% in the women with VBAC. Rosen *et al*[18,19] reported 1.8% and 1% rates for perinatal mortality in trial of labour women and repeat elective LSCS women respectively. Mozurkewich *et al*[20] reported 0.58% and 0.34% for the above groups. Dodd *et al*[21] observed 0.77% perinatal mortality and nil mortality, respectively for the above groups. All the above studies have reported almost equal perinatal mortality for both groups.

Table 5: Comparison of maternal and perinatal outcome in VBAC with other studies

Study	No. of women	Scar dehiscence	Perinatal death	Maternal death	Hysterectomy	Endometritis/ febrile illness	Blood transfusion
Guise *et al*[16]	21 studies	0.27%	0.13-0.9%	Nil	0.034	9%	-
Landon *et al*[17]	17898	0.7%	0.04%	Nil	0.2%	2.9%	1.7%
Devkare *et al*[22]	260	2%	1.5%	Nil	Nil	Not reported	Not reported
Present study	400	1.4%	1.4%	Nil	Nil	Nil	4%

Favorable initial pelvic examination, onset of spontaneous labour are likely to give successful VBAC results in women with a single prior low transverse cesarean delivery and no prior vaginal deliveries. However attempted VBAC and failed VBAC have more maternal infectious morbidity. VBAC is suggested for registered and screened antenatal women in whom LSCS can be avoided. VBAC reduces the hospital stay and decreases the financial burden on the patients.[22]

Limitations in our set up: A few limitations seen in our study were that some of the women could not clearly state the indication of previous cesarean section due to illiteracy and ignorance. Non availability of previous discharge notes was observed leading to paucity of information regarding place, type of scar, any extensions of the scar, complications during previous surgeries. Due to heavy work load at the emergency operation theatre one maynot be able to perform immediate cesarean section within 15 minutes as advocated by ACOG.

CONCLUSIONS

Vaginal birth after cesarean section (VBAC) can be integrated as a safe and acceptable option in all tertiary care centres and teaching hospitals. The scar dehiscence rate in our study was 1.4% which could be further reduced by better selection of cases. The perinatal mortality rate was1.4% of which 0.25% was due to scar dehiscence. Favorable cervical score, average birth weight, smooth progress of labor, less need for augmentation of labor are indicators of a successful VBAC.

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