



Delivery in women with previous cesarean section

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OBJECTIVE(S) : To know the outcome of trial of vaginal birth after previous cesarean section (PCS) with special reference to induction of labor at a rural institute with resource constraint.

METHOD(S) : The present prospective observational study was carried out over a period of 2 years by recording the events of labor in cases of PCS at a rural referral health care educational institute in Central India. During the study period 945 cases of PCS were admitted, however 232 were excluded from the study because either they had exclusion criteria or they did not deliver at the place of study, leaving a total of 713 study subjects.

RESULTS : In 324 women (45.5%) vaginal delivery was contemplated and in 389 (54.5%) repeat cesarean section (CS) was planned. Out of the 324 planned for vaginal delivery, 231(71.2%) finally delivered vaginally making it over all 32.4% (231/713) vaginal births and 67.6% (231/713) repeat CS in cases of PCS. Induction of labor could be safely done in 19 (5.8%) cases without any mortality or induction related complications. Major morbidity did occur in 0.68%.cases but it had nothing to do with trial or induction of labor. Perinatal loss was 0.61%.

CONCLUSION(S): A trial of labor and induction of labor are safe modalities in women with PCS even in poor resource settings. The key is the discerning selection of women who should have elective repeat CS or induction of labor or a trial of spontaneous onset of labor with vaginal delivery.

Key words : previous cesarean section, induction of labor, vaginal birth after cesarean section

Introduction

Before 1970s the phrase “once a cesarean, always a cesarean” dictated obstetric practice. Later because of escalating rates of cesarean section (CS) suggestions were made that vaginal birth after CS (VBAC) might help in reducing the rates of CS. So trial of labor in cases of previous CS (PCS) has been accepted as a way to reduce the overall CS rates. There is evidence of safety of trial of labor, with or without induction of labor, with reduction in iatrogenic prematurity, and maternal morbidity and mortality. VBAC is believed to be appropriate for most women with a history of low transverse CS. However several factors increase the likelihood of a failed trial, which in turn might lead to increased

maternal and perinatal morbidity including uterine rupture and related fetal morbidity and mortality rates¹. In view of this, trial of labor and induction of labor in women with PCS remain controversial and continuous critical audit of the trends is imperative.

We endeavored to look into the issue at a rural referral health care educational institute with resource constraints in Central India.

Methods

The present prospective observational study was carried out over a period of 2 years. All the women admitted with PCS during the study period were included in the study to start with. Complete history including indication of PCS, intra- and postoperative complications of PCS, the details of the present pregnancy, fetal size, amount of liquor, scar tenderness, pelvic adequacy, and any other disorder were recorded. However those who had presented with intrauterine fetal death, two previous CS, previous vertical uterine scar

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and scar of other uterine surgery, and those who did not deliver at the place of study were excluded from the final analysis. Plans of management, waiting for spontaneous onset or induction after looking into the indication of PCS, eventful / uneventful PCS, thinning of uterine scar on ultrasonography, fetopelvic disproportion (FPD) in the present pregnancy, and other contraindications to induction and vaginal delivery were recorded for all the study subjects. Those women who had induced or spontaneous labor and trial of vaginal delivery were always prepared for emergency CS if the need arose. Maternal and fetal monitoring included pulse rate, blood pressure, scar tenderness, fetal heart rate, vaginal bleeding, progress of labor and final maternofetal outcome.

Results

During the period of study 945(11.4% of total obstetric admissions) women with PCS were admitted but 232 were excluded as per the exclusion criteria and 713 (11.1% of total deliveries) were finally analyzed. Looking into the

previous details and present findings, in 324 (45.5%) vaginal delivery was contemplated and in 389 (54.5%) elective CS was planned.

Of the 18 women who had PCS for failure of induction 12(66.6%) delivered vaginally in the present pregnancy and 6(33.4%) had CS for FPD. Of the 6 women (0.8%) who had PCS for obstructed labor, one delivered vaginally and five had CS (Table 1).

Of the 365 (51.1%) women with FPD as the indication of PCS, five had CS for scar tenderness in the present pregnancy but during the surgery none showed scar dehiscence. However one woman who had other reason for PCS and was operated for FPD in the present pregnancy was found to have scar dehiscence during the surgery.

Of those women in whom vaginal delivery was contemplated 19 (5.8%) had induction of labor – nine for postdatism, six for pregnancy induced hypertension and four for severe

Table I Indications of previous and present cesarean section (n=713).

indication of previous cesarean section	Vaginal delivery (n=231)		Indications of CS in index pregnancy (n=482)										
	Normal	Instrumental	FPD	AP	FT	FD	ST	CP	OL	APH	T	FOI	IE
FPD 365 (51.1%)	16 (4.3)	-	308 (84.3)	5 (1.3)	9 (2.4)	14 (3.8)	4 (1)	4 (1)	3 (0.8)	-	-	2 (0.5)	-
FD 192 (26.9%) S	132 (68.7)	1 (0.5)	16 (8.3)	3 (1.5)	2 (1)	19 (9.8)	-	1 (0.5)	-	7 (3.6)	5 (2.6)	-	6 (3.1)
AP 60 (8.4%)	22 (36.6)	5 (8.3)	13 (21.6)	13 (21.6)	3 (5.0)	3 (5)	-	-	-	1 (1.6)	-	-	-
NPOL 40 (5.6%)	24 (60)	5 (12.5)	8 (20)	2 (5)	1 (2.5)	-	-	-	-	-	-	-	-
FOI 18 (2.5%)	10 (55.5)	2 (11.1)	2 (16.6)	3	-	-	-	-	-	-	-	1 (5.5)	-
OL 6 (0.8%)	1 (16.6)	-	3 (50)	-	-	1 (16.6)	1 (16.6)	-	-	-	-	-	-
T 8 (1.1%)	4 (50)	-	-	2 (25)	-	1 (12.5)	-	-	-	1 (12.5)	-	-	-
APH 24 (3.3%)	9 (37.5)	-	2 (8.3)	5 (20.8)	3 (12.5)	3 (12.5)	-	-	-	1 (4.1)	-	-	1 (4.1)
Total 713	218	13	352	33	18	41	5	5	3	10	5	3	7

Figures in brackets represent percentages.

FPD – Fetopelvic disproportion
ST – Scar tenderness
FOI – Failure of Induction

AP – Abnormal presentation
OL – Obstructed Labour
NPOL – Nonprogress of Labor

FT – Failed trial
APH – Antepartum hemorrhage

FD – Fetal distress
T – Twins

CP – Cord Prolapse
IE. – Impending eclampsia

preeclampsia. Induction of labor was done after looking into gestational age, and degree of fetal compromise. Nine women were induced after 40 weeks of gestation, seven between 37 and 38 weeks and the three between 34 and 37 weeks. Four women were induced with vaginal dinoprostone (PGE₂ tablets), 13 with oxytocin and two with vaginal dinoprostone and oxytocin. Ten (52.6%) of the 19 so induced delivered vaginally and nine (47.4%) had CS – five for failure of induction and four for other indications.

Two (0.6%) women who underwent emergency CS (one for obstructed labor and the other for accidental hemorrhage with no progress of labor) had atonic postpartum hemorrhage (PPH). They needed subtotal hysterectomy as internal iliac artery ligation also failed to control the hemorrhage. One (0.3%) woman who had CS for obstructed labor, had traumatic PPH. There was no other morbidity .

There was no stillbirth but four neonatal deaths did occur. Two babies had multiple congenital anomalies, (dextrocardia, congenital talipes equinovarus, and hypogenitalism), one baby had congenital tuberculosis (mother was diagnosed as open case of pulmonary tuberculosis at 36 weeks and was given antitubercular treatment but delivered within 10 days), and one baby was small for gestational age with very low birth weight.

Discussion

Several studies suggest that for appropriately selected women with PCS, a trial of labor is safe, even safer than elective repeat CS. Published literature shows that there has been a 60-80% success in attempts at vaginal birth after a cesarean section ². We had 71 % success in those who had trial of labor. Factors that negatively influence the likelihood of successful VBAC are believed to be cases with labor augmentation and induction, maternal obesity, gestational age beyond 40 weeks, birth weight greater than 4000 g, and interdelivery interval of less than 19 months ¹. In the present study, of the 29% cases where trial of labor had failed, 10% were older than 30 years and had CS for cervical dystocia ,15% were postdated and remaining 4% were operated because of scar tenderness but there was no evidence of scar dehiscence during CS.

Dhall et al ³ have reported that around 76% of women with PCS undergoing trial of labor have vaginal delivery. Singh et al ⁴ report 65% VBAC. McMohan et al ⁵ have reported vaginal delivery in 66% of those with dystocia, 84% of those with malpresentation and 75% of those with fetal distress as indication of PCS. Our respective figures are 68%, 38% and 77%.

However there are reports of problems too. In one study it

is reported that trial of labor in cases of PCS contributed to 56% of the uterine ruptures, but several occurred before labor and would thus not necessarily have been prevented by planned elective repeat CS ⁶. The identification of prospective risk factors associated with all uterine scar failures (uterine rupture and uterine dehiscence) may guide the selection of VBAC candidates better ⁷.

The risk of uterine rupture in cases of PCS is believed to be significantly higher with an induced labor than with a spontaneous labor with trial. In a study when authors had excluded prostaglandin E₂ (PGE₂) exposure, however, the risk was only 0.74% which was not significantly higher than that associated with spontaneous labor. More than 6 fold increase in uterine rupture with PGE₂ induction compared to spontaneous trial of labor has been reported ⁸. Nonsignificant trends towards higher rupture rates with the use of PGE₂ have been reported by others ⁹. But some others report no increased risk ^{10,11}. Oxytocin has also been reported as a cause of small but significant increase in the rate of uterine rupture by some but others did not experience this ¹². Induction of labor was done in 19 or 5.8% of our cases. Four women were induced with vaginal dinoprostone, 13 with oxytocin and two with vaginal dinoprostone and oxytocin. There was no scar rupture and there was no trial or induction related perinatal loss. We believe that induction of labor could be carried out for usual reasons because if one allows the uterus to contract with spontaneous labor, one should be willing to stimulate it with exogenous oxytocics. However one has to be aware of hyperstimulation and nature's warnings.

In the present study maternal mortality was nil. Arora et al ¹³ have reported 0.14% maternal morbidity in the form of cesarean hysterectomy; we had 0.6%. Kore et al ¹⁴ have reported an incidence of 1.4% PPH and 0.5% ruptured uterus, compared to 0.9% PPH and no rupture respectively in the present study. With a trial of labor, more favorable profile with respect to maternal morbidity, blood transfusion, and hysterectomy has been reported ¹⁵. However 85% of delivery related perinatal deaths at term among women having a trial of labor had occurred at or after 39 weeks gestation in the study by Smith et al ¹⁶. There are disadvantages to the baby with elective CS. In a study CS at term before the onset of labor was associated with significantly greater risk of neonatal respiratory morbidity than delivery by other means ¹⁷.

Despite the importance of safety in childbirth for women with PCS, relatively few high quality studies have been conducted. Although existing screening tools may be reasonably good for use by practitioners, further efforts should focus on developing user friendly formats and

determining the clinical context in which they are most useful¹⁸.

Induction is safe in selected cases. Oxytocin is effective and is recommended in response to standard obstetric indications. However prostaglandin induction/ augmentation needs much caution. In properly selected women, VBAC can constitute safe form of management. Nonrecurrent indication for PCS bears little influence as it relates to the success of achieving vaginal delivery in current pregnancy. The key is the discerning selection of women to be allowed a trial of vaginal delivery with or without induction.

Conclusion

The ability to predict women who are at high risk for failing trial of labor and those with high probability of successful vaginal delivery would help guide clinicians and women in making good clinical decisions and minimizing adverse events. With some basics not forgotten, individualized approach seems to be the best.

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