Original / Research Articles

Labour Induction in Patients with Previous One Caesarean Section

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Abstract

Aims: **To study the incidence of vaginal birth after induction of labour in previous one caesarean section, predictors of success and to compare the maternal and foetal morbidities in induced cases (study group) and elective repeat caesarean section cases (control group).**

Methods: **A prospective observation of 68 women who had one previous caesarean section was conducted at our institute from Aug 2006 to July 2007. Preselected 38 patients were chosen for induction.**

Result: **73.68% women in study group delivered vaginally. Young age, low body mass index at first prenatal visit, nonrecurrent indication for prior caesarean and favourable cervix predicted induction success. Indications of maternal and neonatal morbidity were not significantly higher in study group.**

Conclusion**: Women who have had a caesarean section for non recurrent indication should strongly consider vaginal birth for subsequent pregnancies. We cautiously suggest, induction of labour should be considered in preselected patients with strict monitoring.**

Introduction

Although spontaneous labour is preferred in women who have experienced a previous caesarean delivery, there are multitudes of studies suggesting that ripening of the cervix and trial of labour in women with one previous low transverse caesarean section is not contraindicated. Induction of labour is a safe option when there is a maternal or foetal indication for induction of labour in these patients. In such patients, ripening of cervix and trial of labour with PGE2 vaginal/intracervical gel, amniotomy and/or oxytocin infusion is not associated with increasing risk of scar dehiscence, rupture, perinatal or maternal morbidity or mortality when administered in a standard dosing regimen and under close vigilance.[1]

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Objective

To study the incidence of vaginal birth after induction of labour in previous one lower segment caesarean section done for non recurrent indication, assessment of relative importance of antenatal factors related to previous and current pregnancy upon which success of trial of scar after caesarean depends and to compare the maternal and foetal morbidities in induced cases (study group) and elective repeat caesarean section cases (control group).

Material and Methods

A prospective study was conducted in the Department of Obstetrics and Gynaecology, at Bhabha Atomic Research

Centre and Hospital Mumbai over a period of one year, from August 2006 to July 2007 with 68 pregnant patients who had previous one lower segment caesarean section. After counselling 38 pregnant patients at term with previous one LSCS for non recurrent indication were induced for different indications (study group). Patients with one previous LSCS who delivered vaginally without induction were not included in the study. Patients who had previous classic / more than one caesarean sections / any other scar on the uterus / non vertex presentation / not willing for induction /inter deliveries interval less than 2 yrs/any contraindication for vaginal deliveries in current pregnancy were also excluded. On admission patient's (study group) pelvic adequacy and Bishop score was detected, nonstress test and ultrasonography was done. Patients who had score ≤4, cervical ripening done with single intracervical instillation of dinoprostone gel (0.5 mg in 3 mg base). Paracervical smearing of gel done in premature rupture of membrane cases. Patient was reassessed after 6 hours and if no improvement in Bishop's score found taken for repeat LSCS. Patient who improved need of augmentation of labour was assessed and implemented by other methods such as rupture of membrane and/or oxytocin administration in standard dosing regimen. Patients with score > 4 induction of labour with oxytocin drip was done without preinduction ripening. During whole labour strict monitoring of maternal vital parameters, scar tenderness and continuous electronic foetal monitoring was done. Demographic profile, gestational age, improvement of Bishop's score, induction delivery interval, mode of delivery and foeto-maternal outcome these findings were recorded on special proforma designed for the purpose. Maternal and foetal outcome findings were compared with 30 pregnant women who were taken for repeat elective caesarean section at term(control group).

Table 1 : Age wise distribution of cases

Study group (N=38)						
Age	**Vaginal**	**(%)**	**Em. LSCS**	**(%)**	**Total**	**(%)**
≤30	21	87.5	3	12.5	24	100
31-35	6	50	6	50	12	100
>35	1	50	1	50	2	100
Total	28	-	10	-	38	-

Table 2 BMI wise distribution of cases

Study group (N=38)						
BMI	**Vaginal**		**Em. LSCS**		**Total**	
	No	**%**	**No**	**%**	**No**	**%**
(Kg/M^2)						
<25	22	91.67	2	8.33	24	100
25-29.9	4	44.44	5	55.56	9	100
30-39.9	2	40	3	60	5	100
Total	28	-	10	-	38	-

Table 3 : Correlation of indication for previous caesarean with induction outcome

Indication of Previous LSCS	**No. of cases deliveries (N = 38)**		**Vaginal (n = 28)**		**Em. LSCS (n = 10)**	
	No.	**%**	**No.**	**%**	**No.**	**%**
Primi. with Breech	7	18.42	5	13.16	2	5.26
Foetal distress	10	26.30	7	18.42	3	7.89
Oligohyd-ramnios	4	10.53	2	5.26	2	5.26
IUGR	4	10.53	3	7.89	1	2.63
Non progress of labour (NPOL)	5	13.15	5	13.15	0	0
Premature rupture of membrane (PROM)	5	13.15	4	10.53	1	2.63
Placenta praevia	3	7.89	2	5.26	1	2.63
Total	38	100	28	73.66	10	26.32

Table 4 : Induction indication wise labour outcome in induced cases

Indication	No. of cases		Vaginal		Em. LSCS	
	(N = 38)		(n = 28)		(n = 10)	
	No	%	No	%	No	%
PROM	13	34.2	11	28.9	2	5.26
Post dated	9	23.8	2	5.26	7	18.42
Gest. Htn. /PIH	6	15.76	6	15.76	0	0
GDM	2	5.26	2	5.26	0	0
Suspected IUGR	4	10.52	4	10.52	0	0
Mild oligohydramnios	2	5.26	1	2.63	1	2.63
Rh negative	2	5.26	2	5.26	0	0
TOTAL	38	100	28	73.68	10	26.32

Table No 5 : Bishop's score wise outcome of Induced cases

Study group						
Bishop's score	Vaginal		Em. LSCS		Total	
	(n=28)		(n=10)		(N=38)	
	No	%	No	%	No	%
≤4	15	65.21	8	34.79	23	100
> 4 to ≤6	13	86.67	2	13.33	15	100

Table no 6 : Induction delivery interval in VBAC patients (n=28)

Duration in hours					
< 12		12-18		> 18 - < 24	
No	%	No	%	No	%
20	71.43	6	21.43	2	7.14

Table 7 : Incidence of maternal and foetal morbidities

Study group (N= 38)					Control group (N= 30)	
Morbid-ities	Vaginal (n=28)		Em.LSCS (n=10)		Total (N=38)	Elective LSCS
	No.	%	No.	%	No. %	No. %
PPH	2	5.26	1	2.63	3 7.89	2 6.67
Febrile morbidity	1	2.63	2	5.26	3 7.89	7 23.33
Blood tran -sfusion	0	0	1	2.63	1 2.63	0 0
Apgar < 7 at 1 min	0	0	1	2.63	1 2.63	2 6.67
Apgar < 7 at 5 min	0	0	0	0	0 0	1 3.33
Admission NICU	1	2.63	3	7.8	4 10.5	4 13.3

Discussion and Results

To curb the increasing rate of caesarean section the ACOG committee stated "In the absence of a contraindication, a woman with one previous caesarean delivery with a low transverse incision should be counselled and encouraged to attempt labour in her current pregnancy".[2] In 1998 the American College of Obstetricians and Gynaecologists[3] in an update of their recommendation advised that the use of oxytocin or PGE2 for Vaginal birth after caesarean (VBAC) requires close patient monitoring and informed patient consent. In 38 induced cases, 28 cases (73.68%) delivered vaginally and 10 cases (26.32%) were taken for emergency caesarean section for different indication among that 40% were because of failure to progress. Maximum (87.5%) of vaginal deliveries occurred in women in age group of ≤30 yrs and for caesarean deliveries were in age group 31-35 years. Flamm et al[4] suggested a negative association between increasing maternal age and vaginal deliveries. Maximum (91.67%) vaginal deliveries occurred in women having BMI < 25, at their first antenatal visit. Maximum failed induction were in the BMI group > 29.9. Theresa's[5] study found that obesity is an independent risk factor for failed trial of labour. Women with previous caesarean section should be counselled for avoidance of excessive weight gain to improve success of VBAC. Among induced patients the most common indication for previous caesarean section was foetal distress, the next common indication was breech presentation. VBAC success rate was 70% (7 out of 10 cases) and 71.45% (5 out of 7 cases) respectively for above indications.

All the patients who previously underwent caesarean section for failure to progress (FTP) also delivered vaginally. Several studies have indicated that the diagnosis of FTP has no prognostic value from one pregnancy to the next and should not exclude a patient from a trial of labour before proper pelvic assessment and effective foetal weight estimation. In present pregnancy commonest indication for induction of labour was premature rupture of membrane (PROM), 11 out of 13 cases (84.61%) delivered vaginally. The most common cause for failure of trials was post term pregnancy, only 2 out of 9 cases (22.22%) delivered vaginally. VBAC rate among study group, was 86.67% in women with Bishop Score > 4 (induced with oxytocin) and 65.21% in women whose Bishop Score was ≤4 (preinduction cervical ripening with PGE2 gel required), which is statistically significant ($p < 0.05$). The rate of emergency caesarean sections in women with bishop score ≤4 was 34.79%. Induction - vaginal delivery interval < 12 hrs was in 20 patients (71.43%). The mean induction-vaginal delivery interval was 10 hrs 30 minutes with S.D. of ± 3 hrs 40 minutes. The onset of labour was noted from the regular painful uterine contractions. Out of 38 induced patients one patient had silent scar rupture, for postdated pregnancy cervical ripening with PGE2 gel was done (bishop score ≤ 4), pt underwent emergency caesarean for failure to progress of labour (FTP). Intraoperative, 3-4 cm window on the left side of scar was found. The rate is comparable to scar rupture rate of 1.3% in Flamm et al,[4] 2.9% in Bujold,[6] and 2.9% and Ravasia[7] study in PGE2 treated group. They concluded that status of cervix rather than induction agent itself may be the actual factor associated with scar rupture. In study group, maternal morbidities were comparable to elective caesarean section's group except for febrile morbidity. In our study, the highest febrile morbidity occurred in elective repeat caesarean group 23.33% in comparison to 7.89% in trial group. Febrile morbidity was more in emergency caesarean section cases (5.26%) in comparison to vaginal birth cases (2.63%) in study group. Rosen et al[8] found 5 fold increased risk of fever in cases with caesarean sections. Incidence of NICU admission (P value = 0.065) and neonatal complications (P value = 0.23) was not statistically significant in both groups. The neonatal complications appear to be incidental, and not projection of safety/unsafety of induction/mode of delivery. Two babies (6.67%) in control group and one (2.63%) in study group had APGAR 4 and 6 respectively, at 1 minute, which is comparable to 2.5 % and 3.1% respectively of Bujold et al[6] and Yariv Yogev[9] study. Among these two babies (control group) one baby had < 7 APGAR even at 5 minutes, later on diagnosed for pulmonary hypoplasia and died. Average baby weight in VBAC group was between 2.6-3.5 kg in 25 patients (65.79%). All the patients in study group delivered baby of ≤ 4 kg, other studies[10,11] have demonstrated a higher failure rate with trials if foetal birth weight was of > 4 kg.

Conclusion

Repeated caesarean section is an issue

of major importance in developing countries where family size is relatively large and several repeated caesarean sections put a potential risk of increased maternal and foetal morbidity and mortality in future pregnancy. Attempting vaginal birth after caesarean section is important as it offers one potential area where alarmingly high rate of caesarean section can be reduced. Vigilance with respect to indication at primary caesarean delivery, proper counselling for trial of scar and evaluation of patients with prior caesarean section for vaginal birth in current pregnancy are key to reduce the caesarean section rate. There is no doubt that a trial of labour is a relatively safe procedure, but it is not risk free. PGE2 gel and oxytocin may be used safely for usual obstetrics indications and are effective in majority of cases with prior single lower segment caesarean section, provided mother and foetus are closely monitored in a well equipped unit with a round the clock services for emergency surgery. Many studies didn't find any statistically significant association between induction and increased incidence of scar rupture, maternal - foetal morbidity or mortality and caesarean section. In our study the repeat caesarean was rendered unnecessary in more than seventy percent patients by simple solution of labour induction; if induction was ruled out most of these patients would have to be delivered by repeat caesarean section with its associated morbidity and expense.

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