

Clinical Study of Vaginal Birth After Cesarean Delivery



Medical Science

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ABSTRACT

AIMS AND OBJECTIVES 1) To study the incidence, the efficacy and safety of attempted vaginal birth after previous one cesarean section. 2) To study the maternal and perinatal outcome in vaginal birth after previous one cesarean section. Method. All women with previous one cesarean section for non-recurrent indications admitted in labor room of our hospital during the period from November 2011 to August 2013 were studied. RESULT Out of 727 patients 67.26% delivered vaginally and 32.74% required repeat cesarean section due to various reasons. The rate of successful VBAC is significantly more in patients with H/O prior vaginal delivery. There was more no. of patients delivered vaginally when the previous indication was abnormal presentation Rate of cesarean section was more when the previous indication was failed induction Conclusion we concluded that trial of labor after one cesarean section should be undertaken in selected patients in well equipped hospitals. Vaginal delivery is much safer than repeat cesarean section.

Introduction

Before 1970's the phrase 'Once a cesarean, always a cesarean' dictated obstetric practice. It was Cragin's¹ dictum. This was an era when all cesarean sections were performed using classical incision on uterus. Even then, the issue of VBAC was constantly investigated. The operation Cesarean Section itself evolved from it being done in desperate situations as a post mortem surgery to save the unborn child to the present times, when one of the common indication for it is a 'previous cesarean section'. Practicing obstetricians encounter increasing number of post cesareans pregnancies because the number of primary cesarean sections for non-recurrent causes is rapidly rising. There is a growing concern by the obstetrician managing these cases since there are medical as well as legal problems involved. All post-cesarean pregnancies do not require repeat cesarean section and a majority of them may have uncomplicated vaginal delivery. The procedure is not simple and needs to be performed only when circumstances distinctly require it.² As the rate of cesarean sections is escalating, suggestions were made that VBAC might help in reducing the rates of cesarean sections. There is a definite risk of uterine rupture in VBAC often leading to catastrophes which can be avoided by rapid diagnosis and prompt intervention. In an appropriate clinical setting and properly selected group of women, VBAC is safe and effective.^{2,3} Trial of Labor in cases of previous cesarean sections has been accepted as a way to reduce the overall cesarean section rates. All post cesarean pregnancies do not require repeat CS and a majority of them may have uncomplicated vaginal delivery⁴. There is evidence of safety of trial of Labor, with or without induction of labor, with reduction in iatrogenic prematurity, maternal morbidity and mortality. Studies were undertaken to reascertain these facts with the hope that more women will be encouraged to avoid an unnecessary repeat cesarean section by opting for vaginal delivery. VBAC offers a distinct advantage over a repeat cesarean section since the operative morbidity and mortality is completely eliminated, the hospital stay is much shorter and expenses involved are much less. Women and their relatives should be informed and counseled regarding the safety and the risk involved in both the modes of delivery⁵.

Material and Methods:

This was a prospective, observational and analytic study. All women with previous cesarean section for non-recurrent indications admitted in labor room of our hospital in department of obstetrics and gynecology during the period from 1st November

2011 to 31 st August 2013 were studied.

Inclusion Criteria:

All women admitted in the labor room of our hospital between the year November 2011 to August 2013, with gestational age between 37-42 weeks and previous lower segment cesarean section for non-recurrent indications.

Exclusion Criteria:

The following cases will be excluded from the study:

- 1] Previous Classical cesarean section.
- 2] Previous two or more lower segment cesarean sections.
- 3] H/O postoperative wound infections and puerperal sepsis following previous lower segment cesarean section.
- 4] Contraindications to vaginal delivery like major degree of CPD, placenta praevia, transverse lie.
- 5] Previous uterine surgeries like myomectomy,
- 6] Malpresentations.
- 7] Inter-delivery interval less than 18 months.
- 8] Patient not willing for trial of labor.

Methodology

Recruitment of Subjects:

- 1] Subjects were the patients admitted in labor rooms for trial of labor.
- 2] These consisted of both, those booked cases who have visited before in the antenatal clinics and those who have visited directly as emergency.
- 3] Informed consent was taken.
- 4] Pelvic assessment was done to assess the adequacy of pelvis.
- 5] Emergency preparedness measures like availability of surgeon, anesthetist, the operating room personnel and sufficient blood was always ensured.

Trial of labor:

Trial of labor in women with previous LSCS for non-recurrent indications and gestational age between 37-42 weeks was given in labor room to those who had undergone spontaneous labor or who have been induced with trans-cervical Foleys catheter and labor induction by amniotomy was done in those who required. Labor monitoring was done carefully by recording maternal pulse, blood pressure and plotting partogram for each patient and fetal heart monitoring was done by intermittent auscultation by stethoscope and fetal Doppler. Vigilant watch was kept for symptoms and signs of scar dehiscence and scar

rupture, especially when labor was induced or augmented. Attempt at vaginal delivery was abandoned if there was any suspicion of scar dehiscence or fetal distress or unsatisfactory progress of labor. All women were always prepared for emergency CS if need arose.

Observations and Results

Table No. 1

Total no. of patients given trial of VBAC	727 [100%]
Total no. of patients delivered successfully vaginally [Including vacuum deliveries]	489 [67.26%]
Total no. of patients who needed repeat C. S.	238 [32.74%]

Total 727 patients with previous lower segment cesarean section were given trial of labor. Out of those 489 patients i.e. 67.26% delivered vaginally and 238 patients i.e. 32.74% required repeat cesarean section due to various reasons.

Table No. 2 Distribution of Patients according to Age

Sr. no.	Age [yrs]	No. of patients delivered vaginally	No. of vacuum deliveries	No. of patients needed repeat C.S.	Total	P value
1.	≤20	29 [61.70%]	00 [0%]	18 [38.30%]	47 [6.46%]	P>0.05
2.	21-25	276 [57.26%]	54 [11.20%]	152 [31.54%]	482 [66.30%]	
3.	26-30	101 [57.72%]	17 [9.71%]	57 [32.57%]	175 [24.07%]	
4.	>30	09 [39.13%]	03 [13.04%]	11 [47.83%]	23 [3.16%]	
Total		415	74	238	727 [100%]	

Table No. 5 Distribution of Patients According to H/O prior Vaginal delivery

Sr.No	H/O vaginal delivery	Successful VBAC	Vacuum assisted delivery	Repeat C.S.	Total	P value	RR
1.	Yes	112 [73.20%]	18 [11.76%]	23 [15.04%]	153 [21.05%]	P<0.01	1.59[1.43-1.77]
2.	No	303 [52.79%]	56 [9.76%]	215 [37.45%]	574 [78.95%]		
3.	Total	415	74	238	727		

The rate of successful VBAC is significantly more in patients with H/O prior vaginal delivery

Table No. 6 Distribution of patients according to Gestational Age

Sr. No.	Gestational Age[weeks]	Successful VBAC	Vacuum assisted deliveries	Repeat C.S.	Total	P value
1.	37-40	386 [60.79%]	60 [9.45%]	189 [29.76%]	635 [87.35%]	< 0.01
2.	>40	29 [31.52%]	14 [15.22%]	49 [53.26%]	92 [12.65%]	
3.	Total	415	74	238	727[100%]	

The rate of repeat cesarean section is significantly higher i.e. 53.26% when the gestational age was more than 40 weeks

Table No. 7 Distribution of patients according to Spontaneous Vs induced Labour

Sr.No.	Mode of onset of labor	Successful VBAC	Vacuum assisted deliveries	Repeat C.S.	Total	P value	RR
1.	Spontaneous	387 [61.43%]	60 [9.52%]	183 [29.05%]	630 [86.66%]	P<0.01	1.64[1.3-2.07]
2.	Induction	28 [28.87%]	14 [14.43%]	55 [56.70%]	97 [13.34%]		
3.	Total	415	74	238	727[100%]		

The rate of successful VBAC is significantly higher in spontaneous onset of labor.

Table No. 8 Distribution of patients according to Cervical dilatation on Admission

Sr.No.	Cervical dilatation	Successful VBAC	Vacuum assisted deliveries	Repeat C.S.	Total	P value	RR
1.	<4cm	103 [35.89%]	25 [8.71%]	159 [55.40%]	287 [39.48%]	P<0.01	0.54 [0.47-0.62]
2.	>4cm	312 [70.91%]	49 [11.14%]	79 [17.95%]	440 [60.52%]		
3.	Total	415	74	238	727[100%]		

The rate of successful VBAC is significantly higher in patients who were admitted in active stage of labor

Table No. 3 Distribution of patients according to Booking Status

Sr. No.	Status	Successful VBAC	Vacuum assisted delivery	Repeat C.S.	Total	P value
1.	Booked at GHS	278[60.04%]	47[10.15%]	138[29.81%]	463 [63.69%]	P<0.001
2.	Booked outside GHS	72[41.86%]	14[8.14%]	86[50%]	172 [23.66%]	
3.	Unbooked	65[70.65%]	13[14.13%]	14[15.22%]	92 [12.65%]	
4.	Total	415	74	238	727	

Table No. 4 Distribution Of patients According to Parity

Sr.no.	Parity	Successful VBAC	Vacuum assisted deliveries	Repeat C.S.	Total
1.	P1	309[53.28%]	55[9.48%]	216[37.24%]	580[79.78%]
2.	P2	92[71.32%]	17[13.18%]	20[15.50%]	129[17.74%]
3.	P3	13[76.48%]	02[11.76%]	02[11.76%]	17[2.34%]
4.	P4	01[100%]	00	00	01[0.14%]
5.	Total	415	74	238	727[100%]

From the above table, it is concluded that the rate of successful VBAC increases with the parity. The rate of repeat cesarean section is more in primipara patients i.e. 37.24% as compared to multipara patients.

Table No.9 Distribution of patients according to Indication of Previous C.S. and their Outcome

Sr.NO	Indication of Prev.C.S.	Successful VBAC	Vacuum assisted deliveries	Repeat C.S.	Total
1.	Fetal distress	121 [56.81%]	20 [9.39%]	72 [33.80%]	213 [29.30%]
2.	Breech	74 [71.84%]	14 [13.60%]	15 [14.56%]	103 [14.17%]
3.	CPD	47[54.02%]	18[20.69%]	22[25.29%]	87[11.97%]
4.	Not known	29[46.77%]	8[12.90%]	25[40.33%]	62[8.53%]
5.	PROM	39[67.24%]	4[6.90%]	15[25.86%]	58[7.98%]
6.	Severe oligohydraomnios	32[66.67%]	6[12.50%]	10[20.83%]	48[6.60%]
7.	Failure of Induction	12[26.09%]	01[2.17%]	33[71.74%]	46[6.33%]
8.	PIH	25[56.82%]	01[2.27%]	18[40.91%]	44[6.05%]
9.	Failure to Progress	11[39.29%]	02[7.14%]	15[53.57%]	28[3.85%]
10.	Prolonged Second stage	05[41.67%]	00	07[58.33%]	12[1.65%]
11.	Twins	05[62.50%]	00	03[37.50%]	08[1.10%]
12.	APH	04[57.14%]	00	03[42.86%]	07[0.96%]
13.	Transverse lie	05[100%]	00	00	05[0.69%]
14.	CDOD	04[100%]	00	00	04[0.55%]
15.	Impending DIC	02[100%]	00	00	02[0.28%]
16.	Total	415	74	238	727

The rate of successful VBAC is more when the indication for previous cesarean section was abnormal presentation [85.44%].

Table No. 10 Indication for Repeat Caesarian section

Sr.No.	Indication	No.
1.	Fetal distress	109[45.80%]
2.	Suspected Scar dehiscence	55[23.11%]
3.	PROM	20[8.40%]
4.	Failure to progress	17[7.14%]
5.	Failure of induction	13[5.46%]
6.	Prolonged second stage	10[4.20%]

7.	Rupture uterus	07[2.94%]
8.	Impending DIC	04[1.68%]
9.	Severe oligohydrmnios	02[0.84%]
10.	Severe oligo. + IUGR	01[0.43%]
11.	Total	238[100%]

The most common indication for repeat cesarean section was fetal distress [45.80%].

Table No. 11 Distribution of Patients according to Birth weight

Sr.No.	Weight range [in Kg]	Successful VBAC	Vacuum assisted deliveries	Repeat C.S.	Total	P value	RR
1.	<2.5	101 [73.19%]	01 [0.72%]	36 [26.09%]	138 [18.98%]	P>0.05	1.12 [1-1.26]
2.	2.5-3.5	314 [54.14%]	69 [11.90%]	197 [33.96%]	580 [79.78%]		
3.	>3.5	00	04 [44.44%]	05 [55.56%]	09 [1.24%]		
4.	Total	415	74	238	727[100%]		

The rate of repeat cesarean section is more i.e. 56% in patients with birth weight >3.5kg.

Table No. 12 APGAR SCORE

Time	Score	Successful VBAC	Vacuum assisted deliveries	Repeat C.S.	Total	P value	RR
1 min	0-6	15 [30.61%]	04 [8.16%]	30 [61.33%]	49 [6.74%]	P<0.001	0.56 [0.39-0.80]
	7-10	400 [59%]	70 [10.32%]	208 [30.68%]	678 [93.26%]		
	Total	415	74	238	727 [100%]		
5 min	0-6	02 [10%]	03 [15%]	15 [75%]	20 [2.75%]	P<0.001	0.37 [0.17-0.78]
	7-10	413 [58.42%]	7 [10.04%]	223 [31.54%]	707 [97.25%]		
	Total	415	74	238	727[100%]		

It is concluded that poor APGAR scores at 1min and 5 min are significantly associated with mode of delivery

Table 13 Comparing Neonatal Morbidity:

Sr.No.	Cause of NICU admission	Successful VBAC	Vacuum assisted deliveries	Repeat C.S.	Total
1.	PNA	6	3	11	20[50%]
2.	MAS	4	1	4	9[22.50%]
3.	RDS	2	0	6	8[20%]
4.	PNA+LBW	0	0	1	1[2.50%]
5.	LBW	1	0	0	1[2.50%]
6.	PJ	1	0	0	1[2.50%]
7.	Total	14	4	22	40[100%]

The most common cause for NICU admission in both vaginal as well repeat cesarean section group was birth asphyxia. [50%].

Table 14 Showing perinatal deaths

Sr.No.	Cause of perinatal death	NO.	Total
1.	Severe PNA with Rupture uterus	3	3
2.	Meconium aspiration syndrome	1	1
3.	Stillborn -birth asphyxia	1	1
4.	Total	5	5

Table 15 Maternal complications following vaginal delivery

Sr.No.	Complication	No
1.	Need of blood transfusion	18
2.	Cervical tear	07
3.	Perineal tear	04
4.	Puerperial pyrexia	03
5.	Atonic PPH	03
6.	Scar rupture	01
7.	Total	36

Table 16 Maternal Complications following C.S.

Sr.No.	Complication	NO.
1.	Wound infection	29
2.	Need of Blood transfusion	29
3.	Puerperial pyrexia	15
4.	Atonic PPH	11
5.	Intra-operative excess blood loss	11
6.	Respiratory infection	09
7.	Burst abdomen	01
8.	Bladder injury	01
9.	Omental herniation from drain site	01

Incidence of Scar dehiscence and Scar rupture in failed trial of labor:

Out of 727 patients who had given Trial of labor, 238 patients required repeat cesarean section. In that 55 patients were shifted for repeat LSCS for suspected scar dehiscence, out of which scar dehiscence was found in 13 patients. i.e. 1.79%.

Out of 238 patients who had failed Trial of labor, Uterine Scar rupture was found in 07 patients i.e. 0.96%. One case of scar rupture after vacuum assisted vaginal delivery was found. [0.14%]. In that case Laparotomy and scar repair was done on postnatal day -6. One case of rupture uterus with intrauterine death referred from outside needed obstetric hysterectomy.

Discussion

Every registered patient of previous cesarean section was examined carefully at each antenatal visit. Ultra-sonography and special blood or other investigations were done if required. Patients with risk factors were admitted and treated accordingly. Every patient whether emergency or booked was interrogated, examined thoroughly and was investigated whenever necessary.

Published literature shows that there has been a 60-80% success in VBAC. 6,7,8 In this study, total 727 patients with previous one cesarean section, singleton gestation in vertex presentation and having adequate pelvis underwent trial of labor. Out of those 489 patients i.e. 67.26% delivered vaginally. [Including vacuum assisted delivery in 74 patients i.e. 10.18%] and 238 patients i.e. 32.74% required repeat cesarean section for various reasons. Factors that negatively influence the likelihood of successful VBAC are believed to be cases with labor induction and augmentation, maternal obesity, gestational age >40 weeks, birth weight >4000 gm and inter delivery interval of less than 19 months. Most of the patients who needed repeat cesarean section were shifted because they have developed fetal distress i.e. 45.80% [n=109], while 55 patients i.e. 23.11% needed repeat cesarean section because of suspected scar dehiscence, 20 patients i.e. 8.40% needed repeat cesarean section because of prolonged PROM and 17 patients i.e. 7.14% required repeat cesarean section because of failure to progress.

In our study, 90.37% of patients [n=657] were distributed in the age group between 21-30 yrs and only 3.16% of patients [n=23] were above 30 yrs of age group. We found increase rate of repeat cesarean section in patients above 30 yrs of age. But also we found that significant increase in the rate of successful VBAC in patients with H/O prior vaginal delivery i.e. 84.96% [p<0.01] as compared to 62.55% success rate of VBAC in patients with no H/O prior vaginal delivery. A history of a previous successful VBAC increases the likelihood for success with future attempts 9,10. Nearly 64% of patients [n=463] were booked at our hospital, only 12.65% patients [n= 92] were un-booked and remaining 23.66% patients [n=172] were booked outside. In this study, we found the need for repeat cesarean section was more in patients booked outside. We also found that there was significant increase in the rate of repeat cesarean section in patients with gestational age more than 40 weeks. [p <0.01].

There was significantly higher rate of successful VBAC i.e. 70.95% [n= 447] in patients with spontaneous onset of labor as compared to 43.30% [n= 42] in patients with induced labor. Also the success rate of VBAC was significantly higher i.e. 82.05% in patients with cervical dilatation > 4 cm on admission as compared to 44.60% in patients with cervical dilatation < 4 cm on admission. This association is extremely significant [p <0.01]. The rate of successful VBAC also depends upon the indication for previous cesarean section. There were more no. of patients delivered vaginally when the previous indication was abnormal presentation [85.44%], severe oligohydramnios [79.17%], CPD [74.70%], PROM [74.14%], fetal distress [66.205], PIH [59.09%].

Also the rate of cesarean section was more when the previous indication was failed induction [71.74%], Prolonged second stage of labor [58.33%], failure to progress [53.57%]. Depending upon the birth weight, in present study we found that the rate of repeat cesarean section was more i.e. 56% when the birth weight is more than 3.5 kg. Neither repeat cesarean delivery nor trial of labor is riskfree. When compared maternal complications following delivery in successful VBAC and repeat LSCS group, overall rate of need of blood transfusion, wound infection, puerperal pyrexia, atonic PPH, blood loss, respiratory infections, postoperative morbidity and hospital stay was more in repeat cesarean section group. In that 55 patients were shifted for repeat LSCS for suspected scar dehiscence, out of which scar dehiscence was found in 13 patients. i.e. 1.79%. Babies born with APGAR score less than 6 at 1 min are 49 i.e. 6.74% and this amount is reduced to 20 at 5 min APGAR score i.e. 2.75%. The babies born with poor APGAR score is mostly associated with repeat LSCS group. There were total 5 perinatal deaths, out of those 3 were associated with severe PNA with rupture uterus, 1 with meconium aspiration syndrome and 1 was still born- birth asphyxia.

CONCLUSIONS:

An attempt for VBAC is well justified for post cesarean pregnancies with non-recurrent indications. Screening for this should preferably begin at antenatal booking itself to minimize the associated risks. Vaginal delivery is much safer than repeat cesarean section. The significance of vaginal delivery is emphasized because of its minimum post-partum morbidity, minimum anesthetic and operative risks, financial liabilities, less hospital stay, emotional and psychological satisfaction to mother. It seems appropriate to encourage a trial of labor in almost all patients with a prior lower segment transverse uterine incision unless there is a strong physician or patient-derived contraindication to such an undertaking. Proper selection, appropriate timing, suitable method by competent staff are the key factors to achieve greater degree of success. Finally, with some basics not forgotten, individualized approach seems to be the best.

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