



## **Maternal and Fetal Outcome of VBAC after First Previous LSCS in A Tertiary Care Teaching Hospital of Western India.**

**\*Vikas Devkare,\*\* Neha Vijay Agarwal \*\*\*Nandkishore Gayakwad,  
\*\*\*\*Swati Kamant**

\*Assistant Professor, \*\*Junior Resident, \*\*\*Associate Professor, Dept. of Gynaecology and Obstetrics, Govt. Medical College, Miraj, Maharashtra, India, 416410

\*\*\*\*Consultant, Obstetrics and Gynaecology, Devkare Hospital, Laparoscopy and Maternity, Miraj, Maharashtra, India, 416410

Corresponding Author: Dr. Vikasdevkare, Assistant Professor, Dept. of Gynaecology and Onstetrics, Govt. Medical College, Miraj, Maharashtra, India, 416410

E-mail: [drvikasdevkare@gmail.com](mailto:drvikasdevkare@gmail.com)

### **Abstract**

**Introduction** – Making a decision about mode of delivery in the second pregnancy after a previous caesarian section is a dilemma faced by both patient and obstetrician. Contradictory evidences and the fear of medico legal litigation remains a major concern while making a decision about Vaginal Birth After previous Cesarean section. In the present study we gave a trial of VBAC to carefully selected patient reporting to our tertiary care government hospital and analyzed the maternal and fetal outcome of the VBAC.

**Material and Methods** – The present study was conducted in the department of Obstetrics and Gynecology Government Medical College Miraj in the state of Maharashtra of India. Total 260 pateints having history of previous LSCS and selected by applying approved inclusion and exclusion criteria were enrolled in the study for trial of VBAC. The various variables like indication of previous LSCS, maternal complication of the VBAC, fetal outcome and duration of the hospital stay ware analyzed.

**Results** – Total 260 patients were enrolled in the study, of these only 12 % required a repeat emergency caesarian section. The rate of success of VBAC was 100 % and 88.3 % in age group of 18 to 20 years and 20-25 years respectively. Success of VABC was more in the non-recurring causes of the previous LSCS. Baby weight less than 3.5 kg proved to be a favoring factor for success of VBAC. Scar dehiscence (40%) and failure to progress (40%) were the major indication for repeat ERCS. Average stay in the hospital after VBAC was 2 days while for the ERCS it was 5 days approximately.

**Conclusion** - Careful selection and cautious trial of VBAC is successful in about 88 percent of the pregnant women participants of our study. We further proved that in the cases of non-recurrent causes of pervious LSCS, a fair trial of VBAC can be given. VBAC decreases the hospital stay and decreases the perinatal morbidity and mortality

**Keywords:** VBAC, elective repeat caesarian section.

## Introduction

Women who become pregnant after delivering their first baby by caesarean section often have to make a decision about how to deliver their second baby. Typically, they will be offered the choice of having an elective repeat caesarean section (ERCS) or attempting a vaginal birth after caesarean section (VBAC)<sup>[1,2]</sup>. Although the World Health Organization has recommended that no more than 15% of deliveries should be via Caesarean section (CS)<sup>[3]</sup>. There is a continuous uptrend in the incidence of the CS in the developed and developing countries alike<sup>[4,5,6]</sup>. Previous caesarean section has been found to be the commonest cause of increased caesarean section rate in many parts of the world<sup>[9]</sup>. This trend, go together with rising rates of primary caesarean section and has been a significant driver of the overall caesarean section rate, which continues to cause widespread public and professional concern.

In recent years, there has been a reported decline in the use of VBAC in several countries. In the USA, the overall rate of VBAC (i.e. successful VBAC/all women with a previous caesarean section) decreased from 24% in 1996 to 8% in 2010<sup>[4,5,6]</sup>. It has been suggested that this decline has been a response to new evidence on the risks associated with VBAC and clinicians fear of professional liability<sup>[7]</sup>. Several observational studies examining maternal and neonatal outcomes related to failed trial of labour have identified an increased risk of various complications, including uterine rupture during labour, complications of emergency caesarean and perinatal morbidity or mortality.<sup>[8]</sup>

A 60 to 80% success rate of vaginal birth after previous caesarean section has been reported by many authors if the primary caesarean was done for nonrecurring indications. Some of the nonrecurring indications for caesarean section are: poor labour progress, foetal distress, placenta previa, transverse lie, breech presentation, oblique lie, pregnancy induced hypertension and twins<sup>[11]</sup>.

Increased CS rate leads to gynecological as well as obstetrical complications. Gynecological complications include secondary infertility, recurrent abortions, difficult hysterectomy due to bladder adhesions; obstetrically placenta percreta, placenta praevia, peripartum hysterectomy, peripartum cystectomy and maternal death due to torrential blood loss are the major long term complication<sup>[11]</sup>. Caesarean section leads to more maternal morbidity and mortality than normal delivery, although caesarean section may be safer than normal vaginal delivery for the baby. Sometimes the families are poor and can't afford caesarean. In primary health centers there may not be facilities available for fetal monitoring or anesthesia and there is lack of trained personnel. A recent Cochrane Review found that both VBAC and lower segment cesarian section (LSCS) section have benefits and risks associated with them; however, after reviewing the limited data, they concluded that no trial exists to adequately help women and their caregivers to make an informed decision between the two<sup>[12]</sup>

The data on the success and failure of the VBAC in the Indian subcontinent is inadequate. There are limited number of studies available addressing the risk and benefits of VABC. Moreover the evidence is contradictory, the dilemma of the caregiver and the patients remains unanswered. So, we decided to conduct a prospective study for one year where we evaluated outcome of the VBAC in the patients reporting to our teaching hospital after previous one CS. We tried to analyze maternal and fetal outcome of the VBAC as well the success rate of VBAC in our government run tertiary care institute. This study might provide an evidence and guideline for patients and the Obstetricians while making the choice between VBAC and ERCS.

## Materials and Methods

The present prospective study was conducted in the Government Medical College and hospital Miraj, in the state of Maharashtra (India) for one years, starting Jan 2016 to Dec. 2016. The study was reviewed and approved by the institutional ethical committee. The participants of the study were recruited on the basis of the inclusion and

exclusion criteria after detailed counselling. Risks and benefits of the VBAC were explained in native language and a written informed consent was obtained. The patients admitted in the labour room during the study period with a history of previous one caesarian section and willing to undergo VBAC were primarily selected and screened by detailed history of previous CS. History regarding indication of previous CS, complication of previous section, duration of hospital stay, any history of cephalopelvic disproportion in the previous pregnancy were enquired and recorded. Detailed evaluation of the present pregnancy was undertaken. Patients coming under the exclusion criteria were excluded and advised for the planed LSCS and remaining were included in the study. Exclusion criteria comprised of following major points- (a)Estimated fetal weight > 3.5 kg on ultrasonography,(b) Breech presentation,(c)History of postoperative wound infection following previous LSCS, (d)Associated anemia (Hb<10gm %), (e)pregnancy induced hypertension,(f) diabetes,(g)heart disease,(h)renal disease, (i)Details of the previous cesarean operation not available,(j)Contraindications to vaginal delivery like cephalopelvic disproportion,(k) major degree placenta previa, (l)transverse lie,(m)Previous 2 or more LSCS, (n)Previous classical cesarean section, (o)Presence of signs suggestive of scar dehiscence or rupture.

Medical records available with the patient regarding previous caesarean were reviewed for intra operative and post-operative events. Obstetric ultrasonography at 36 to 37 weeks was a pre-requisite for estimated baby weight. A thorough clinical examination along with clinical pelvimetry was done to rule out contracted pelvis.

The patients included were monitored according to the guidelines in the study design. Non progressing labour was identified as per the definition of Friedman for labour complication, Prolonged latent phase was duration >14 hrs, Protracted active phase if the rate of dilatation was <1.5 cm/hr, Arrest of dilatation when there was cessation of active phase progression for 2 hours., Arrest of descent was diagnosed when

there was cessation of descent of the presenting part for > 1 hour. An appropriate clinical decision was taken for the non-progressing patients.

A trial of labour was given and progress was partographically monitored. Evaluation of Fetal head descent by abdominal examination, Cervical dilatation and effacement, Progressive increase in frequency, duration and strength of uterine contraction, Fetal heart rate regularity with intermittent auscultation, Monitoring for signs and symptoms suggestive of scar dehiscence or rupture were also monitored closely. Depending on the clinical evaluation, decision regarding the use of oxytocin and amniotomy was taken. If the progress was satisfactory, the trial of labour was continued and the patient was allowed to deliver vaginally with an episiotomy, forceps or vacuum.

Trial of labour was discontinued when:

1. There was no progressive dialation of the cervix in active phase of labour.
2. Failure of descent of vertex despite good uterine contractions.
3. Appearance of caput or moulding with the station of vertex high up.
4. Signs suggestive of threatened scar rupture- especially prolonged fetal heart rate deceleration, repetitive non reassuring heart rate pattern, cessation of uterine contractions, abdominal pain out of proportion (especially in between contractions), vaginal bleeding.
5. When fetal distress occurred and vaginal delivery was not imminent.

These patients were taken for emergency repeat caesarean section as failed trial of labour.

Maternal and fetal outcome of the VBAC were recorded and analyzed statistically.

## Results

Present study was conducted in the Government Medical College Miraj after an ethical committee approval. It's a tertiary care teaching hospital in the western Maharashtra region of India. The total 475 number of mothers with one previous caesarean section who reported in our institute were primarily screened. 260 pregnant women were offered VABC and included in the study. Remaining were excluded depending on the

exclusion criteria. The variables studied were the age, booking status, maternal and fetal outcomes and duration of hospital stay.

Among the pregnant full term females enrolled in the study, the success rate of VBAC was highest in the age group of 18-20 and in registered or booked cases than in the unregistered/unbooked cases (Table 1)

Table I: outcome of VBAC with respect of age of the patient and registration status of patients.

Age in years	No	Outcome					
		Successful VBAC	Rate (%)	Caesarean section	Rate (%)	Rupture uterus	Rate(%)
18-20	30	30	100	-	-	-	-
21-25	154	136	88.3	16	10.4	2	1.3
26-30	66	52	78.8	12	18.2	2	3.0
31-35	10	8	80.0	2	20.0	-	-
Registration status and outcome							
Registered	226	214	87	28	11.4	4	1.6
Unregistered	14	12	85.7	2	14.3	-	-
Total	260	226		30		4	

On assessment of cause of previous caesarian section in the previous pregnancy and outcome of the present labour, it was observed that all the patients who underwent caesarian section due to

fetal distress in the previous pregnancy has a highest success rate than other causes, of the 74 patients 68 delivered vaginally and only 4 required an emergency LSCS (Table 2).

Table 2- Indications for previous caesarean section and outcome of labour in present pregnancy

Indication of previous caesarean section	No	Vaginal delivery	Percentage %	C.S	Percentage %	Rupture uterus	Rate %
Fetal distress	74	68	91.9	4	5.4	2	2.7
CPD	28	40	83.3	6	12.5	2	4.2
Breech	42	38	90.5	4	9.5		
Failure to progress	32	28	87.5	4	12.5		
PROM	24	20	83.3	4	16.7	-	-
Transverse lie	16	12	75	4	25	-	-
PIH	14	12	85.7	2	14.3	-	-
APH	4	2	50	2	50	-	-
DTA	2	-	-	2	100	-	-
	260	226		30		4	

VBAC was successful in 87.1 percent of the patients who required an elective LSCS in the

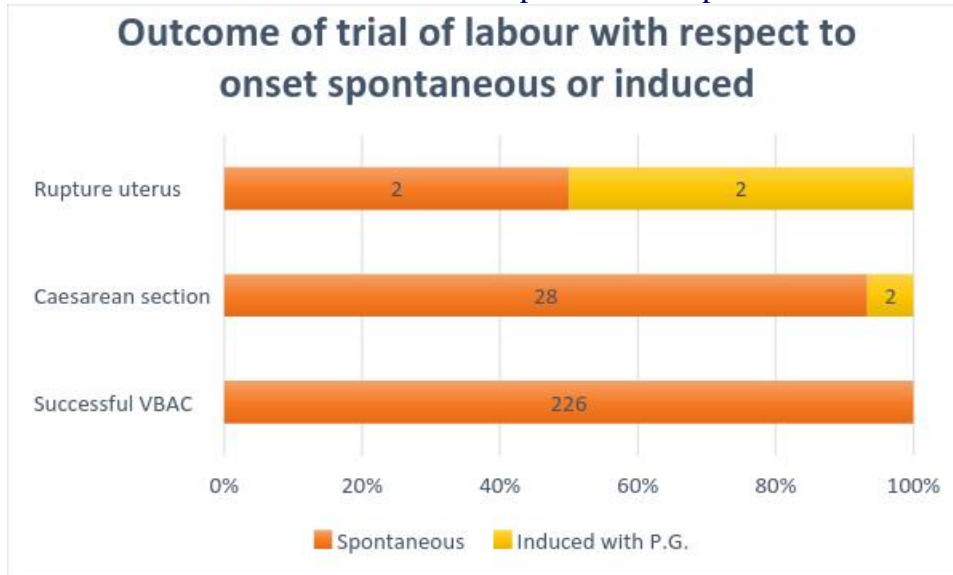
previous pregnancy and only 11.1 percent required a repeat LSCS (Table 3).

Table 3 : Outcome of labour in relation to previous caesarean- emergency or elective

Type of LSCS	No	Outcome	Rate (%)	Caesarean section	Rate (%)	Rupture uterus	Rate(%)
Emergency	216	188	87.1	24	11.1	4	1.8
Elective	44	38	86.3	6	13.7	-	-
Total	260	226		30		4	

In patients with spontaneous onset of labour VBAC- rate was 88.3 percent (FIG 1).

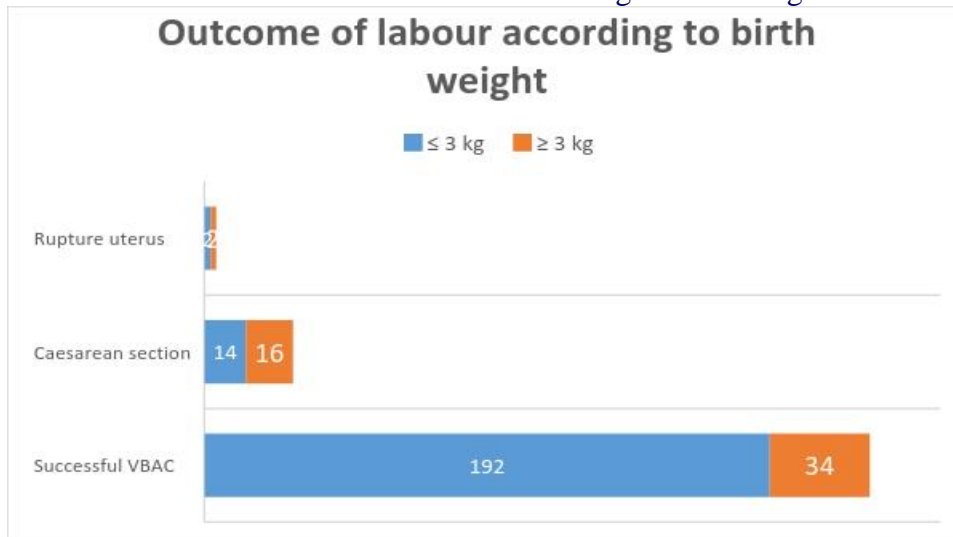
FIG- 1 Outcome of trial of labour with respect to onset spontaneous or induced



When outcome of labour was assessed with respect to the birth weight of the baby, it was found that if the birth weight of baby is less than 3

kg, the chances of VBAC are more than the babies weighing more than 3 kg. (FIG 2).

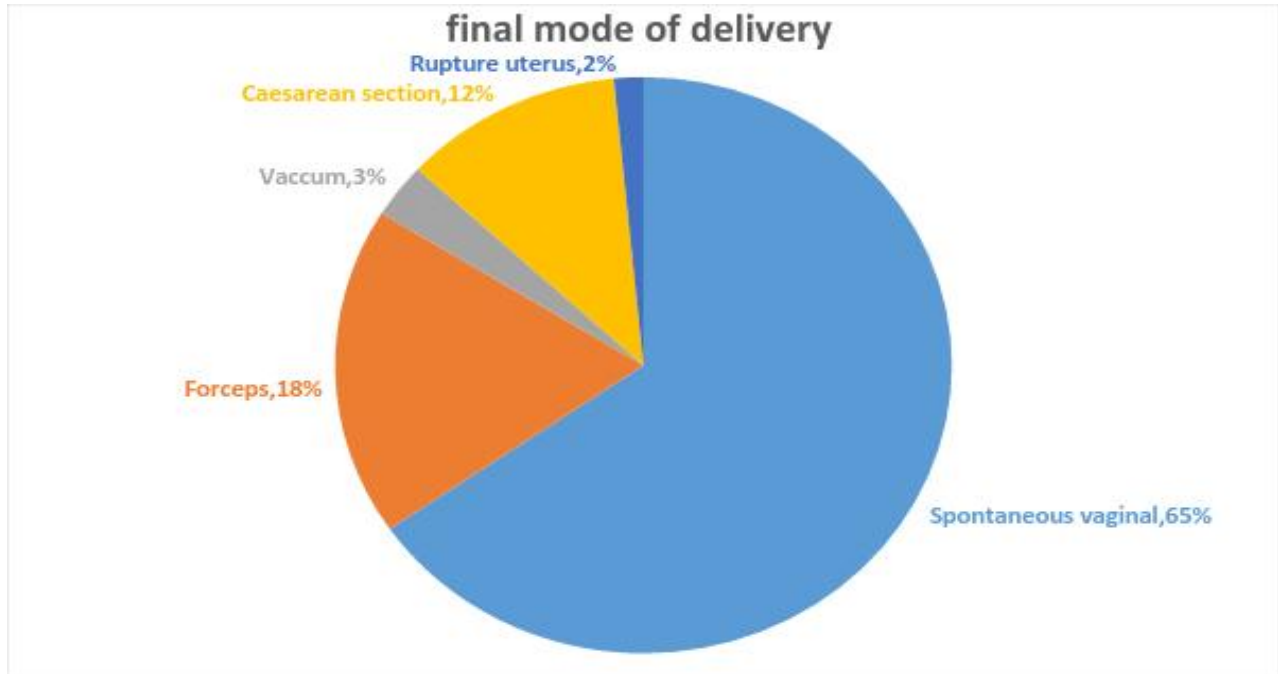
FIG 2 -: Outcome of labour according to birth weight



In our study 65 percent of the enrolled patients has spontaneous vaginal delivery, 18 percent required application of forceps and 3 percent

required a vacuum. In 12 percent patients LSCS was required and 2 percent were complicated with rupture uterus and required further management .

FIG 3



Scar dehiscence and failure to progress were the major causes of the repeat LSCS , The perinatal outcome of the VBAC was also encouraging, in our study there were no cases where the APGAR score was less than 6 in the patients who delivered vaginally. The rate of complication was more in

the patients who required an emergency CS after a trial. In 8 patients APGAR score was less than 6, there were 2 still births, 2 NNDs and 4 patients had sepsis. This suggest that the rare of complication was highest in the patients requiring and emergency cesarean section.

(FIG 4, Table 4)

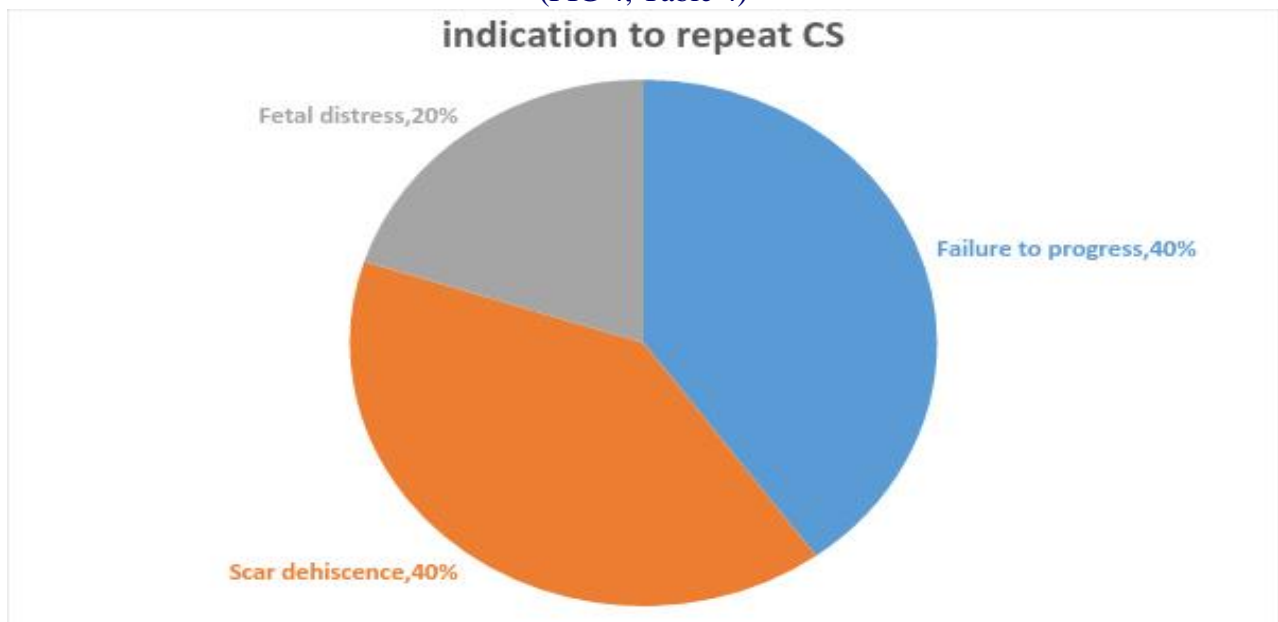




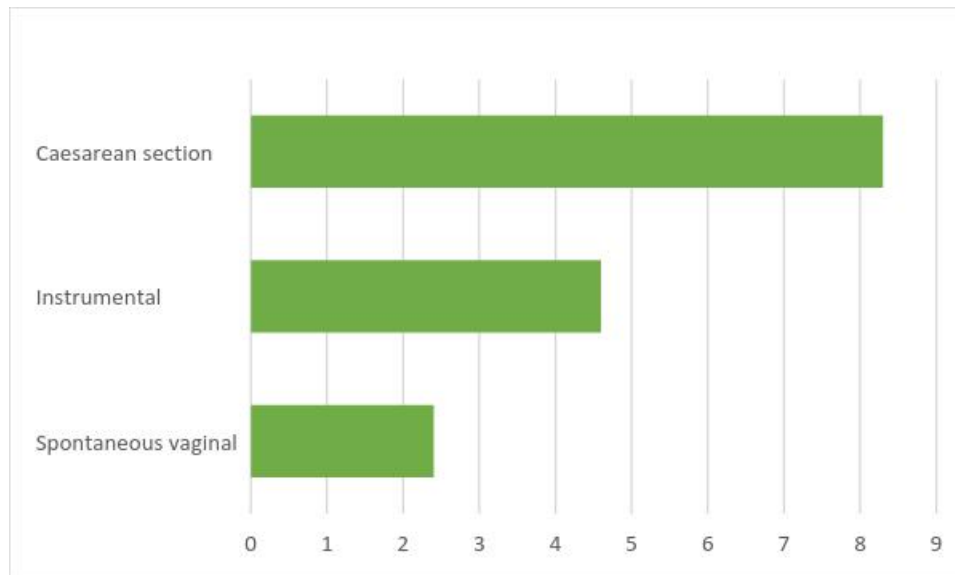
Table 4 Fetal outcome of the VABC

Route of delivery	Numbers	Outcome				
		Mortality		Morbidity		
		Still birth	NND	Jaundice	Sepsis	APGAR < 6
C.S. for trial of labour	30	2	2	-	4	8
Vaginal delivery	170	-	-	-	6	-
Forceps	48	-	-	4	-	-
Vaccum	8	-	-	2	-	-
Rupture uterus	4					1
Total	260	2	2	6	10	9

The average hospital stay increased with instrumentation and the repeat CS. Average hospital stay in the patients who delivered by

spontaneous vaginal delivery, instrumental vaginal delivery and repeat CS was 2.4, 4.6 and 8.3 days respectively (FIG 5).

FIG 5.comparison of hospital stay in the patients of VBAC and caesarian section



**Discussion**

This study was conducted with the main objective of identifying factors associated with successful vaginal delivery in the mothers offered VABC after previous lower segment caesarean section.

BiraraM,Gebrehiwot Y <sup>[10]</sup> in their study have highlighted that the young maternal age and primiparity were associated with high success rate with vaginal delivery. In our study we found that the success of VBAC was more in the age group of 18-20 and closely followed in the age group of the 20 -25 years. Furthermore our study highlights

that the rate of success of VBAC is very high in the booked cases than in the unbooked cases which came to our hospital without any previous visits for routine ANC checkup. We found that 87percent of the booked cases delivered vaginally and 85.5 percent of the unbooked cases delivered vaginally .So the rate of success of the VBAC is more in the booked cases than in unbooked cases. This might be due to the routine investigations performed to evaluate the maternal and fetal wellbeing during the periodical ANC visits. So, we recommend routine periodical ANC visits. Similar results were reported by other Indian studies <sup>[16]</sup>.

Bhalchandran L. and coworkers <sup>[14]</sup> have stated that there are reduced chances of successful vaginal delivery with increasing neonatal baby weight. Our study also highlights the better chances of VBAC for average-sized babies (66.2%) compared to babies weighing more than 3 kg (20%). In the Indian context babies with weight more than 3 kg are the reasons for the cephalopelvic disproportion and an obstructed labour. So the trial of the VBAC should be given cautiously in the patients who are carrying babies weighing more than 3 Kg. <sup>[15,16]</sup>. We recommend an ultrasound examination to evaluate favoring factors before enrolling the patients for VBAC.

Our study further emphasized the finding of other studies that the non-recurring causes of the LSCS in the previous pregnancy don't have a significant hindrance in the VBAC outcome. In our study the major cause of LSCS in the previous pregnancy was fetal distress, about 91.9 percent of these patients the patients delivered vaginally in the second pregnancy. Similarly the non-recurring causes like breach presentation, failure to progress, PROM, Transverse lie, PAH, APH did not prove as a determining factor for repeat LSCS. Contrary to it more than 60 percent of the women underwent successful VBAC. Similar results were obtained by other workers <sup>[10,12,14,15,16]</sup>. Our study further strengthen the observations made by previous studies that the success of VBAC is more in cases where an emergency LSCS was performed in the previous pregnancy. So, we recommend that a fair trial of VBAC should be given in all the patients with a single previous LSCS.

Spontaneous progress of labour was a favoring point for the successful VBAC in our study, we observed that 226 patients from our study who progressed spontaneously without any induction had a better outcome than those who required an induction of labour. Watchful expectation is an advised strategy when dealing with the patients with one previous LSCS and under the trial of VBAC.

In our study 65 percent of the enrolled patients had spontaneous vaginal delivery, 18 percent required application of forces and 3 percent

required a vacuum. In 12 percent patients LSCS was required and 2 percent were complicated with rupture uterus and required further management. These results are consistent with the results of Bhalchandran L. and coworkers <sup>[14]</sup>. Another study from Maharashtra found that the success rate of VBAC is less than our study <sup>[16]</sup>.

### **Fetal outcome**

As shown in table/fig-8 fetal outcome of VABC showed that the rate for fetal mortality and morbidity was higher in the patients in whom Emergency LSCS was required. In total there were 2 cases of still birth, 2 cases of NMD and 8 cases the APGAR score was less than 6. While Apgar scores suffer from subjectivity and have little long-term predictive value, it is an established and accepted part of the neonatal assessment at the time of delivery. Our findings reinforce similar previous studies suggesting that vaginal delivery after one caesarean section is safe as regards neonatal outcomes. Our results are similar to the results of other investigators <sup>[17,18]</sup>

Our study compared hospital stay of the VBAC and ERCS and found that the hospital stay was less in vaginal delivery than the CS. Similar results were reported by other studies across the globe <sup>[4,5,6,10,13,16]</sup>. Decreased hospital stay is beneficial to the patients as well as the hospitals. Decreased hospital stay reflects that there are less complications and decreased financial burden on the family. Moreover if the hospital stay is decreased it decreases the expenditure of the government on the healthcare of pregnant women. Early discharge from hospital increases the availability of beds for other patients and decrease the strain on the overcrowded obstetrics units of government hospital like ours.

### **Strength and limitation**

The strengths of this study were the methodology, the use of inclusion and exclusion criteria. The case ascertainment and analyzing variables with less missing value has added to the strength. There were some limitations in this study the study might be affected from small sample size. There could also be a possibility of recall bias at reporting the inter delivery interval and



indications of past cesarean section. The present study is done in single center. A multi-centric study might be able to give a holistic picture.

## Conclusion

Favorable initial pelvic examination, spontaneous labour are associated with successful VBAC 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 and lower Apgar scores. Our findings may encourage obstetricians to encourage VBAC in the properly screened ANC patients and decrease the rate of recommending caesarean section. Our study further ascertains that there is decreased hospital stay after a vaginal delivery than in the CS. This not only decreases the financial burden on the patients but also helps in decreasing burden on the government by decreasing the healthcare expenditure and avoid overcrowding in the Government run tertiary care centers like ours.

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**Conflict of interest:** None declared

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