Retrospective study on outcome of trial of vaginal birth after Previous Caesarean Section and indications for emergency repeat caesarean section in tertiary care hospital

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Abstract

Materials and Method: Data was recorded on management practices, associated complications and mortality for a period of 1 year in 2015-2016 at teaching hospital for vaginal delivery after caesarean section(VBAC).

Results: A total of 4996 deliveries occurred during the study duration, there were 2248(45%) total cesarean section and 767(33%) were the number of previous cesarean section. In 767 previous LSCS cases 644(28%) had repeat cesarean delivery and 123(5%) delivered vaginally. A trial of labor was planned in 206 women. The success rate of VBAC was 60% with 123 women had successful vaginal delivery and 83 delivered by emergency repeat cesarean section. Major indication of emergency cesarean section was CPD (27%), fetal distress(5%), medical disorder associated (12%), PROM (24%). In majority, surgical technique was conventional. Scar dehiscence and surgical complications were observed in 5.4% and 4.0% of cases respectively. Blood transfusion was given in 1 and post-operative complications were seen in 12.One patient had broad ligament hematoma compressing ureter, who underwent DJ stenting, managed conservatively. Other patient had atonic bladder who had prolonger per urethral catheter, others had complications like fever in postoperative period, UTI, wound infection.

Keywords: VBAC, Elective repeat caesarean, Emergency caesarean delivery, TOLAC

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Introduction

Caesarean is an operative procedure where fetus after the end of 28 weeks is delivered through the incision on abdomen and uterine wall.

Caesarean section is the most common procedure performed during reproductive age group with rates continuing to rise worldwide. One of the most common indications for repeat caesarean section is previous caesarean delivery.[1,2,9]

Women who had previous caesarean, option for mode of birth in their next pregnancy is either a trial of vaginal delivery after caesarean or an elective repeat caesarean delivery. For women who attempt VBAC, the success rate variably reported between 56-80%.[4] The proportion of women attempting a VBAC is reducing in many countries now a days, because of negative thought of an increase in risk of maternal and infant complications related to VBAC, including uterine rupture and perinatal death.[1] The rates of repeated caesarean birth following the previous caesarean have risen, reaching 83% in Australia and almost 90% in in US. Repeat caesarean accounts for 28% of all births in UK now-a-days.[4]

Both ERC and VBAC have benefits and harms. Risks of planned VBAC when compared to planned ERC include hemorrhage, need for blood transfusion, endometritis, uterine rupture, perinatal death, and hypoxic ischemic encephalopathy. Women planning ERC are at increased risk of surgical complications, placenta accreta, and risk of multiple caesareans and their infants are at increased risk of respiratory morbidity.[3]

Advantage of VBAC is shorter maternal hospitalization, less blood loss, fewer transfusions, and fewer thromboembolic events. Uterine rupture occurs in 1 per 1000 undergoing VBAC.[1]

From 1970-2007, the caesarean delivery rate in US rose from 4.5% to 31.8 % with exception of years between 1989 and 1996 when the annual rate of caesarean delivery actually decreased. This decrease was largely due to a significantly increased rate of vaginal birth after caesarean. These trends were short lived, and in 2007, the primary caesarean delivery rate was above 30 %, whereas VBAC rates dropped to 8%.

Pre labour repeat caesarean delivery now contributes almost a third of all caesarean deliveries. To make a significant impact on high caesarean delivery rate in the US the focus should be preventing unnecessary primary cesarean deliveries from several aspect.

In response to the increased use of casarean delivery, the American college of Obstetrics and Gynecologists task force on caserean delivery rates (2000) recommended two benchmarks for the United States for the year 2010. Goals included a cesarean rate of 15.55 for nulliparas at 37weeks or more with singleton cephalic presentation and secondly, a VBAC 37% in women at 37 weeks or more with a singleton cephalic presentation who had prior low transverse casarean delivery. These goals are consistent with 15% caserean rate established by US department of Health and Human services Healthy People 2010 programs for primi parous, low risk women.

Rising trend of Caesarean Section

1. Women are having fewer children, thus, greater percentage of birth are among nulliparas, who are at increased risk for caesarean delivery.
2. Increasing maternal age, elderly mothers being at increased risk if LSCS.
3. Use of electronic fetal monitoring
4. Most babies with breech presentation are delivered by LSCS.
5. Incidence of operative vaginal deliveries has come down.
6. Increasing rate of induction of labour.
7. Caesarean delivery for preeclampsia is on increasing trend.
8. Increasing incidence of obesity
9. Concern for pelvic floor injury associated with vaginal birth, medically indicated preterm birth, to reduce the risk of fetal injury and on patients request.
10. Malpractice litigation continues to contribute significantly to the caesarean rates

Objective

To study the outcome of TOLAC

- Maternal
- fetal

Indications for repeat emergency LSCS

Materials and Method

Retrospective observational study

Data source: Data of patients admitted under department of obstetrics and gynaecology SDM College of Medical Sciences and Hospital, Sattur for period of 1 year.

Study area: Records of patient admitted to labour theatre, SDM Medical College Hospital, Sattur.

Ethical committee clearance obtained and permission from hospital administration obtained to access the medical records from medical record section.

Study period: 1 year

Statistical analysis: The collected demographic information, maternal and neonatal outcome, measures were interred in Microsoft excel sheet and the variables were summarized using number and percentages.(n=2248)

Singleton, term pregnancy with previous LSCS coming to SDM hospital after considering inclusion and exclusion criteria were included in study.

Booked cases were followed up, assessed, counselled for TOLAC in antenatal clinic.

Unbooked cases coming to labour room directly were assessed, counselled for TOLAC. Previous one lscs

Inclusion Criteria:

- Singleton pregnancy with prev lscs
- Cephalic presentation
- Term gestation

Exclusion Criteria:

- Two or more previous caesarean
- Previous myomectomy scar
- Fetal weight more than 4 kg
- Inter delivery interval <18months
- Previous classic section
- Termination of pregnancy for anomalous fetus.

Those who were willing for TOLAC were allowed for vaginal delivery and those not willing for TOLAC, underwent repeat caesarean.

Demographic data, details of obstetric history which includes details of previous LSCS, onset of labour, duration of labour, augmentation of labour, postpartum events were recorded from the records.

Neonatal data was collected till hospital stay and additional details collected regarding clinical course of neonates admitted to NICU.

Results

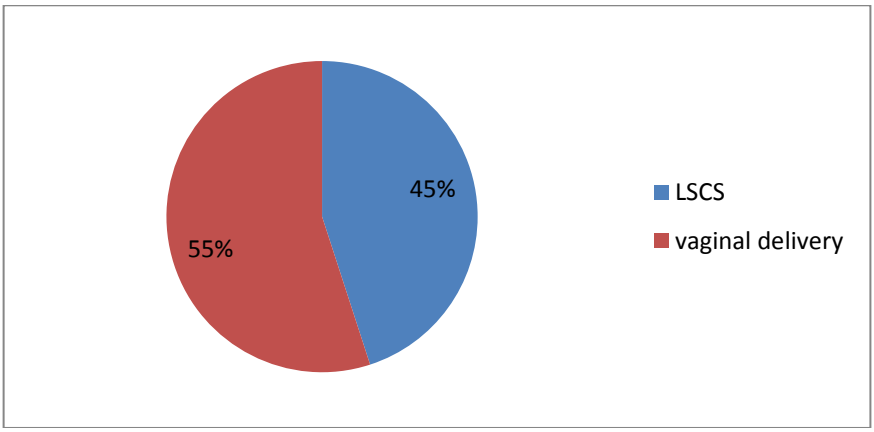

Fig. 1: Incidence of vaginal delivery and caesarean delivery

Fig. 1 shows the incidence of vaginal delivery and LSCS in our institute during study period. Rate of vaginal delivery is 55% (2748) and rate of LSCS is 45% (2248) total number of deliveries being 4996.

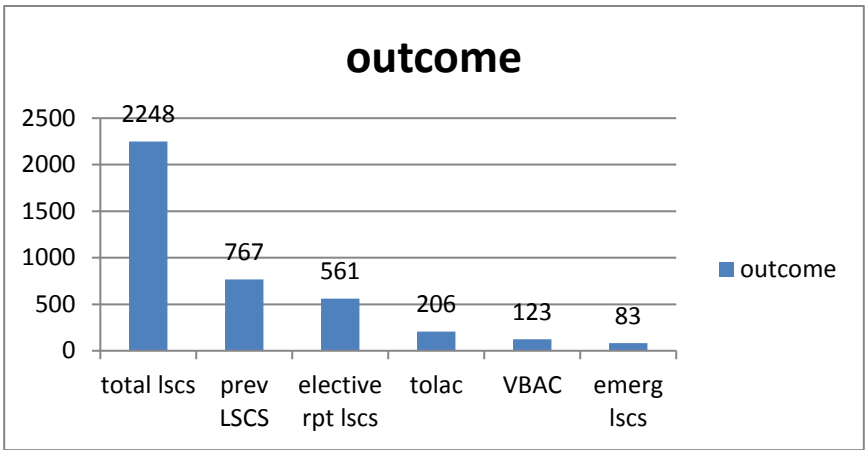

Fig. 2: trend of outcome of previous caesarean delivery.(n=2248)

Fig. 2 shows the outcome of previous caesarean delivery during study period. Total number of LSCS during period was 2248, among them 767 patients were with previous LSCS, 206 were given a trial of labour, 123 had successful vaginal delivery after caesarean but 83 cases were taken up for emergency LSCS. 561 patients went for elective repeat elective caesarean section.

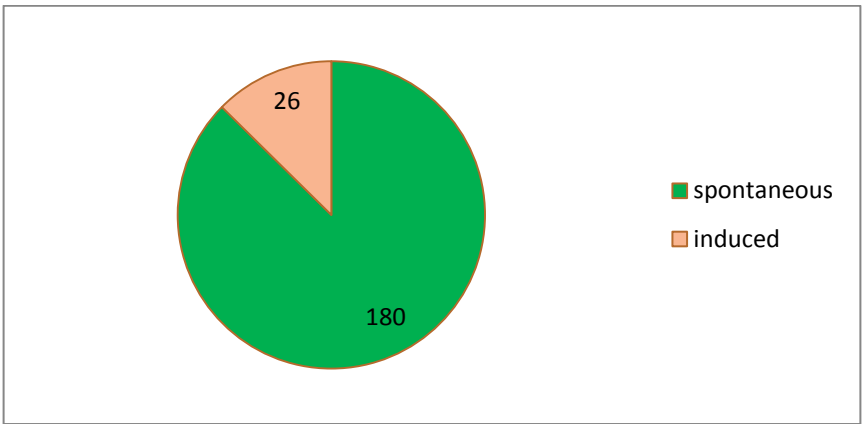

Fig. 4: mode of onset of labour in TOLAC

Fig. 4 shows the mode of onset of labour in cases of TOLAC. Among 206 patients who were given TOLAC, 180 had spontaneous onset of labour and other 26 were induced with foley's bulb.

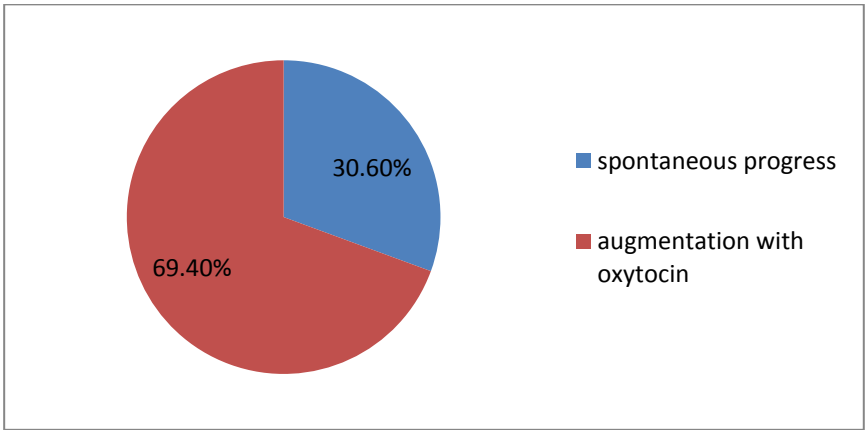

Fig. 5: rate of augmentation of labour in VBAC cases

Fig. 5 shows the rate of augmentation of labor in VBAC cases with low dose oxytocin regimen. Among 206 cases allowed for TOLAC 69% of cases were augmented with oxytocin and 30.6% cases had spontaneous progress of labour.

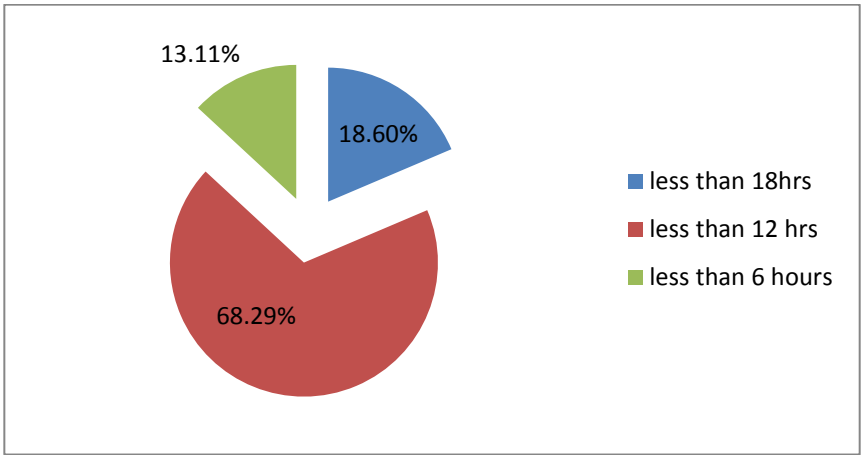

Fig. 6: Induction to delivery interval

Fig. 6 shows induction to delivery interval in cases of VBAC. Among 123 cases underwent VBAC, 68.29% of cases took less than 12 hours, 18.60% of cases took less than 18 hours, 13.11% of cases who took less than 6 hours were in active labour at the time of admission.

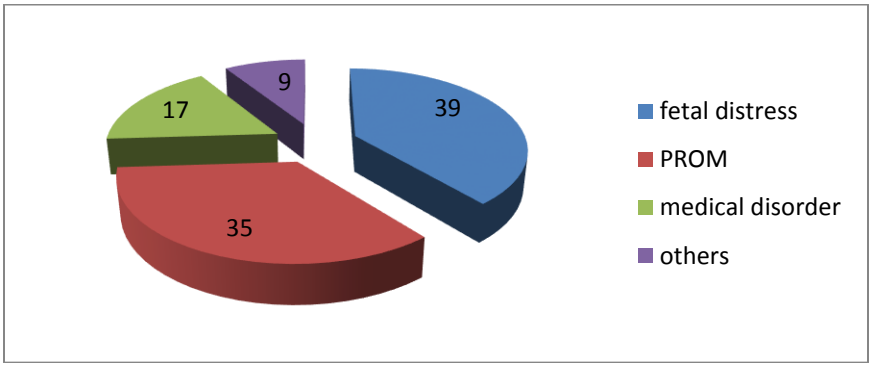

Fig. 7: causes of emergency repeat LSCS

Fig. 7 shows the causes for repeat emergency LSCS during study period. 39 patients had fetal distress, 35 patients had PROM, 17 cases were associated with medical disorders like diabetes and hypertension, and 9 had other causes like oligohydromnios, placenta previa.

Table 1: Intraoperative complications during repeat elective and emergency LSCS

Complications	Repeat elective LSCS (561)		Repeat emergency LSCS (83)	
Adhesions	32	5.7%	39	46.9%
Haematoma	25	4.4%	3	3.6%
Bladder injury	75	13.3%	5	6.02%
Scar dehiscence	5	0.8%	4	4.8%
Uterine rupture	0	0%	1	1.2%
Meconium stained liquor	48	8.5%	26	31.3%
No complications	257	45%	5	6.02%

Table 1 shows the intraoperative complications in repeat elective LSCS and Emergency repeat LSCS. Risk of scar dehiscence and uterine rupture is more in cases of repeat emergency LSCS accounting for 4.8% and 1.2% respectively along with meconium stained liquor accounting for 31.3% which are significant. Risk of hematoma and others aresame in both the groups but risk of bladder injury is more in elective LSCS group.

Table 2: Post-delivery complications

Complications	Elective LSCS (561)	VBAC (123)	Emergency LSCS (83)
UTI	16	42	21
Wound infection	8	5	12
PPH	3	3	6
Headache	40	0	28
Haematoma	2	1	5

Table 2 shows the post delivery complications in 3 groups of patients. Urinary tract infection was more common in VBAC group, followed by emergency LSCS then by Elective LSCS. Wound infection, PPH, Hematoma risk was maximum in emergency LSCS cases.

Table 3: Neonatal outcome in VBAC & ERC

Neonatal outcome	VBAC	ERC	Emergency rpt LSCS
NICU admission	7.5%	12.5%	15%
APGAR <7 @ 1 minute	10%	12.5%	14%
Respiratory distress	12..5%	15%	22%

Table 3 shows the trend of neonatal outcome in VBAC and ERC, i.e. NICU admission (12.5%), Low APGAR @ 1 min (12.5%), respiratory distress (15%) rate is more in elective repeat caesarean group compared to VBAC. But NICU admission rate with emergency repeat LSCS was as high as major indication for emergency repeat LSCS was fetal distress.

Discussion

Mitali das et al., in UK found that previous vaginal delivery, is associated with an approximately 85-90% success rate planned VBAC.They found that in spontaneous onset of labor, success rate of VBAC is 81%. In case of induced labor success rate of VBAC is 67%.the admission to NICU incidence was 7.1% in the full cohort of neonates, which included 9.3% of neonates born by ERCS and 4.9% by VBAC.[11]

Yvonne W. Cheng, et al., found that the probability of VBAC for women with prior vaginal delivery preceding cesarean had an 83%; for women with prior VBAC, the probability of subsequent successful VBAC was 94%.this study also showed that there is increased risk of hemorrhage associated with ERCD (0.3-29%) compared to TOLAC.[9]

Martin JAHB et al., found that multiple gestation and pre eclampsia increased as indication for cesarean delivery at a much faster rate nowadays.[15]

Emma L. Barber, MD et al., concluded that non reassuring fetal status(32%), labour arrest disorder (18%), multiple gestation (16%), suspected macrosomia (10%), pre eclampsia (10%), maternal request (8%), maternal fetal condition (5%), and other conditions (1%) are the common indications for primary cesarean sections.[6]

Menacker F et al., in 2008 concluded that nationally decreasing rates of operative delivery are likely associated with more cesarean performed for labor arrest disorders.[16]

A study by Deirdre J. Lyell et al., The reported incidence of adhesion development after primary cesarean varies from 46- 65%.[8]

A study by ACOG in 2009 found adhesions were not observed for primary cesarean; yet at the second, third, and fourth cesarean delivery, 24.4%, 42.8%, and 47.9% of women respectively.[13]

The incidence bladder injury that was assessed in a cohort study performed at a large academic centre in Rhode island over a 7 year period was found to be 0.28%.[14,16]

An article in May 2013 by current women health reviews concluded that. The incidence of bladder injury during cesarean section is relatively infrequent 0.08 to 0.94%[12] but chances of bladder injury increases as number of previous cesarean increases.

Macones GA et al., in USA found increase in chance of VBAC for patients in active labour in his study.[18]

Jun Zhang MD, et al., found that the cesarean rate was twice as high in induced labor than in spontaneous labor in all pregnancies.[5]

Mark. B. London et al., in USA found that, in patient undergone VBAC 67.4% has been induced, 73.95% was augmented, 80.6% was spontaneous.[17] 26 patients were induced in TOLAC group with foley's bulb where as 180 had spontaneous onset of labour.

The 2010 national institutes of health consensus conference on VBAC highlighted high grade evidence that maternal mortality risk is decreased by VBAC compared to repeat cesarean.[10]

The NICHD study showed planned VBAC, compared to ERCS, increased the risk of uterine rupture(0.5-0.02%), blood transfusion (1.7-1%), and endometritis (2.9-1.8%)[11] even in our study there was 1 case of uterine rupture noted in patients given TOLAC.

ACOG 2014, says that higher rate of respiratory distress (1-5% vs o.1-1.8%), transient tachypnea(6.2% vs 3.5%) in ERCS, which is also noted in our study.

Y Vonne W. Cheng, et al., Australia found that women admitted in active labour has two fold increased chance of VBAC.[21]

Macones GA et al., in USA found increased in chance of VBAC for patients in active labour in his study.[22]

Pratiksha Gupta et al,. in Nigeria found that 52.63% of patients had spontaneous delivery.[23]

Mark. B. London et al., in USA found that, in patient undergone VBAC 67.4% has been induced, 73.95 was augmented, 80.6% was spontaneous.[24]

Conclusion

The cesarean rate in US has risen from 5.5% in 1970 to 16.5% in 1980 to 21% in 1996 to 32.9% in 2009. A 2011 study calculates that if trends continue, the 2020 cesarean rate will be 56.2. The vaginal birth after cesarean (VBAC) rate- the percentage of pregnant women who gave birth vaginally after a previous cesarean- has fallen from a high of 28.3% in 1996 to 8.5% in 2006. The WHO and healthy people 2020 have suggested the ideal cesarean rate should be around 15%.

Over the last decade, the dramatic rise in elective repeat cesarean section (ERCS) has underscored the importance of offering appropriate candidate a TOL, given most of these women will go on to deliver successfully.[7]

In a tertiary care with all the facilities like 24 hr obstetric care and monitoring, facility for LSCS, anaesthetic availability, NICU care appropriate candidates should be selected for TOLAC with good success rate with all the benefits of vaginal delivery.

For all women who had previous lower segment cesarean section, physician should give the option of VBAC unless contraindicated, all risk and benefits has to be explain to them.

Careful selection of candidates for a trial of labor after cesarean (TOLAC) is important to improved maternal and neonatal outcomes.

Benefits of vaginal over abdominal delivery includes less postpartum morbidity, shorter hospital stay, fewer operative and anesthetic risks, financial savings and of immeasurable value is the earlier and easier neonatal- maternal interaction and bonding, success of VBAC has to be explained to patient.

The potential risk and benefits of VBAC and ERCS should be discussed and individualized; antenatal counselling process should be documented in the medical record.[11]

Personnel able to rapidly intervene in cases of failed VBAC requiring emergent cesarean should be available, given the benefit of prompt intervention on neonatal morbidity.[7]

Although TOLAC is appropriate for many women with a history of a cesarean delivery, several factors increase the likelihood of a failed trial of labor, when compared with successful VBAC, is associated with increased maternal and perinatal morbidity.

As uterine rupture is dreadful complication of VBAC, let's compare the risk of uterine rupture, 0.7% with other obstetric emergencies. Cord prolapse, occurs in about 0.28% of births. Placental abruption occurs in about 0.7% of pregnancies. The rate of shoulder dystocia is around 1.29%. The rate of rupture is comparable to the risk of any pregnancy and birth. At the end of the day, obstetrician has to assess the case carefully and decide the mode of delivery and have to counsel the risk/benefits, analysis needs to be decided by mother and family.

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