

Success Rate of Vaginal Deliveries after previous C-section in a Tertiary Care Hospital

RABIA BENISH, NEELAM IQBAL, MUNAWAR SALEEM KHAN, ASAD MAHMOOD KHAN*, GHULAM DASTGIR, MEHREEN BAIG, AYESHA TAHIR, FATIMA KHOSA, SALMA ZAFAR, IQRA NISAR, RAMSHA RAFIQ, BADAR AHMAD JAMAL

ABSTRACT

Aim: To find out the success rate of vaginal deliveries after previous caesarean section, in pregnant females given a trial of labour, and the foremost factors that lead to the failure of these trials.

Design: A cross-sectional study.

Setting: The study was carried out at the Obs & Gynae Department of a tertiary care hospital in Lahore.

Subjects: A sample size of one hundred pregnant females was analyzed. Only the women, with history of single caesarean section by low transverse uterine incision and with no underlying health problems were included

Results: In this study, 24% of cases underwent successful trial of labour, giving birth to the fetus vaginally, and the remaining 76% had a repeat emergency c-section. The main factors that led to failure of vaginal delivery in the selected cases were arrested labour (39.47%), fetal distress (23.68%) and breech presentation of the baby

Conclusion: The success rate of VBAC in this study was lower than other similar studies that have been conducted in Pakistan. Awareness about VBAC and its benefits, over elective repeat C-section, for maternal and child health need to be highlighted by all health professionals and in all tertiary care hospitals.

Keywords: VBAC, Cesarean Section, Trial of Labour, Vaginal Birth

INTRODUCTION

Trial of labor after cesarean delivery” (TOLAC) is a planned attempt to have a vaginal birth after c-section; and if that trial proves successful, resulting in a vaginal birth, it is known as VBAC. According to the American College of Obstetricians & Gynecologists (ACOG), TOLAC is an acceptable option only for those candidates who have had one or two prior caesarean sections with a single low transverse uterine incision¹. These women should not have other major medical problems for example, pre-eclampsia/eclampsia and hypertension.

VBAC is preferred over an elective repeat cesarean section (ERCS) as the pregnant woman is spared from the stress of operating procedure, consequently the period of hospital-stay along with associated financial and psychological stress, gets minimized and it is followed by quick postpartum recovery. VBAC is associated with fewer maternal complications like wound or uterine infection, thromboembolism, hemorrhage etc. Moreover it has a beneficial effect on the fetal lungs as they get cleared while passing through the birth canal.

For women planning on having multiple children, VBAC reduces the problems associated with multiple pregnancies and cesarean sections, for example, heavy bleeding, bladder and bowel injuries and placental abnormalities - accreta or previa. Moreover, there is less than 1% risk of uterine rupture in VBAC performed on a woman with prior low transverse uterine incision. Additionally, VBAC can be more affordable than an ERCS. Several factors have been shown to be associated with an

increased probability of a successful VBAC including, history of prior vaginal delivery (associated with a planned VBAC success rate of 85-90%), spontaneous / non-induced labor, maternal age of less than 40 years, child's birth-weight of less than 4 kg, inter-conception period of more than 2 years, reason for previous cesarean section being breech presentation of the baby.

According to the American College of Obstetricians and Gynecologists (ACOG), a TOL success rate of 60-80% is seen in women with previous caesarean section². A meta-analysis reported VBAC success rate of 73.4% in the United States and the NICHD study reported a success rate of 75%^{3,4}. According to RCOG Green-top Guideline No. 45, planned VBAC shows the success rate of 72-75% [5]. Another research study from US reported VBAC success rates for the term and preterm groups to be 74% and 82%, respectively⁶.

Likewise, in an analytical retrospective study conducted in Aga Khan Hospital for Women, Karimabad Karachi, from October 2011 to September 2012, the success rate of VBAC was found to be 63.6%. Moreover the success rate of VBAC has been shown to be increased from 57% in 2007 to 71.7% in 2010⁷.

METHODOLOGY

A cross-sectional study was conducted at the Obstetrics & Gynaecology Department of Shalamar Hospital, which is a tertiary care set up in Lahore, to determine the success rate of VBAC and the main causes of the failure of the trials. The study was carried out on one hundred selected cases with a single prior C section by low transverse uterine incision and who underwent a trial of labour over the past one year (July 2016 to July 2017). Patient record from the Obs & Gyn Dept. of the said hospital was utilized. Cases were chosen as the study participants by simple random sampling technique. Structured questionnaires

Final Year MBBS students, Shalamar Medical & Dental College, Lahore

*Demonstrator, Biochemistry Shalamar Medical & Dental College, Lahore

Correspondence to Dr. Badar Ahmad Jamal, email: badarjamal.bs478@gmail.com cell:03074949014

were got filled by the medical record of these selected cases. Patients over the age of forty years, grand multipara females and those with underlying major health problems, such as eclampsia, hypertension, diabetes etc. were excluded from the study.

Study variables: Pre-existing medical records were used to fill in the structured questionnaires which included certain parameters namely, gravidity, parity, number of abortions, number of previous c-sections and indications for each, current mode of delivery and indications in case of a failed trial that is subsequently followed by emergency C-section.

Data collection and entry tools: The IBM SPSS was employed for data entry and statistical analysis. Frequencies and pie chart were used to calculate the success rate of VBAC. Chi square was performed for determining the strength of association between various parameters and the subsequent failure of the trials.

RESULTS

In this study, out of the 100 cases analyzed, 24 (24%) underwent successful trial of labour after C-section (TOLAC) whereas 76(76%) had to undergo repeat emergency c-section. The mean of the maternal ages was calculated to be 29 years ± 5. Failure of the progression of labor, fetal distress and breech presentation of the baby were the foremost factors that resulted in a failed VBAC trial, together contributing a share of 80.26% to the indications that as a whole, lead to a repeat emergency c-section. Amongst other reasons that led to failure of TOLAC were pre-eclampsia at term (5.26%), undiagnosed cephalopelvic disproportion (5.26%), abruptio placentae (3.9%) and premature rupture of membranes (2.6%) (Table1).

Correlation of the number of abortion (P=0.512) and maternal age (P=0.782), with mode of delivery were statistically insignificant (P>0.01) as shown by the Pearson Chi square. Therefore, this study concluded that the age of the patient or the number of abortions did not determine whether the trial of labor would prove successful or not. The significance threshold was set at 0.01.

Table 1: Reasons for failed vbac trial

Reasons for failure of VBAS	Count	%age
Genital Herpes at term	1	1.3%
Malposition of the Baby (Oblique Lie)	1	1.3%
Premature Rupture of Membranes (PROM)	2	2.6%
Abruptio placentae	3	3.9%
Cephalopelvic Disproportion	4	5.3%
Pre-eclampsia	4	5.3%
Malposition of the Baby (Breech Presentation)	13	17.1%
Fetal Distress (meconium staining)	18	23.7%
Arrested Labour (failure to progress)	30	39.5%
Total	76	100.0%

DISCUSSION

Total numbers of cases analyzed in the Agha Khan study were 3266 whereas 100 cases were selected in this study. In comparison to the 63.6% success rate calculated in the retrospective study carried out at Agha Khan Hospital for

Women Karimabad, the success rate of 24% in this study is much lower. The difference may be explained by several limitations in this study including inadequate patient details, limited number of cases and variations in hospital facilities for VBAC. In the year 2015, a study carried out at Ziauddin Hospital Kemari campus, Karachi reported a VBAC success rate of 67.8%⁸. A similar local study conducted at a public sector hospital also reported 70% success rate of VBAC in Pakistani females⁹.

In this study, patients given a trial of labour often presented at term or at very late gestational age. As well as not being able to provide adequate antenatal care, instructions and counseling to patients, physicians were left with insufficient time to carry out the concerned investigations and medical workup and consequently could not take adequate measures to make the trial of labour successful, thus significantly lowering the success rate of VBAC. However, despite the low success rate of VBAC, no complications such as uterine rupture, maternal or neonatal mortality were observed amongst the patients in this study.

Forty percent of VBAC candidates were refused trial of labor at a Queens, New York Hospital¹⁰. The reasons cited were convenience of elective caesarean section, painful memory of the previous labor, concerns regarding fetal wellbeing, and the possibility of future genital dysfunction. This suggests that there is significant misconception in the community, not only nationally but internationally, as well. Moreover, awareness, amongst patients about the possibility of vaginal delivery after a single lower-segment uterine incision and the beneficial impact it has on maternal and child health, remains low. In our part of the world where the almost exclusive source of health information are health professionals, the patients and the community as a whole are not sufficiently educated about VBAC and its benefits. A systematic review has suggested that women with one or two previous caesarean deliveries who are considering VBAC should be counseled employing the estimated success rate and, the chances of uterine rupture and adversaries related to c section¹¹.

On the other hand, a report published in 2013 about a survey conducted in United States, showed that 48% of the interviewed subjects would have desired a “VBAC” for their subsequent delivery, and 46% of those who wanted to undergo through a trial of labor, were refused of that possibility¹². Its noteworthy that according to “NIH Consensus Development Conference statement on vaginal birth after c section: New insights”and a practice bulletin of “American College of Obstetricians and Gynecologists” indicate that maternal preference should be the primary determinant of whether the labor trial is to be given or not, but practically speaking, it’s almost impossible to implement, when almost half of the hospitals do not offer that option^{13,14,15}.

Although the “American College of Obstetricians and Gynecologists”has professed in 2010 that most of the women who have had undergone through one prior c section should be provided with the TOLAC opportunity, yet according to a recent report, this option is not available to women in 43% of the Hospitals in California and 59% of the hospitals in New Mexico counties^{14,15,16}. Even when VBAC is not totally out of practice in the hospitals, yet there is only a limited number of obstetricians, who offer a trial of

labor to their patients, it is found to be only 52% among private obstetricians of TAXAS, as reported by a research study in 2010¹⁷. Various causes of this diminished access have been described including precariousness about the availability of proper medical and surgical facilities in case of emergency, concern about the possible hazards of failed VBAC (mainly uterine rupture), and rising concern about the medico-legal implications^{17,18}. In Pakistan, at secondary and some tertiary care hospitals, a gynecologist's decision towards choosing c-section over vaginal births are due to several limiting factors such as failure in providing one-to-one support during labour, lack of fetal monitoring techniques, limited number of external cephalic versions and history of previous c-section.

The rates of delivery by C-section world-wide, have risen high, and accounted for 32.8% of all births in 2011 in the United States¹⁹. Additionally, it's worth mentioning that decline in the rate of VBAC trials is a considerably important cause of increasing rates of caesarean deliveries^{20,21,22}.

Centers for Disease Control and Prevention" (CDC) United States has counted both, raising the VBAC rate by TOLAC and decreasing the primary C-section delivery rates, as two of their "Healthy People 2020 goals"²³. It might actually appear way too hard to decrease the c section rates, yet increased TOLAC and resultantly increased VBAC success rate have had contributed to reduction in caesarean delivery rates in U.S in 1990s²⁴.

Limitations of the study: The limitations for this study included the retrospective design, lack of complete details on the patient's charts and the limited number of cases. The success rate of VBAC calculated in this study is lower than that recorded in different studies carried out in Pakistan.

CONCLUSION

The success rate of VBAC can be increased by counseling and planning for VBAC early in the antenatal period, regular check-ups and availability of proper facilities in hospitals that offer VBAC trials. Moreover, maternity clinicians need to be aware of the best practice and contextualize the evidence for individual women to improve VBAC rates.

REFERENCES

- Neff MJ. ACOG Releases Guidelines for Vaginal Birth After Cesarean Delivery [Internet]. American Family Physician. 2004 [cited 2018Apr19]. Available from: <https://www.aafp.org/afp/2004/1001/p1397.html>
- ACOG Releases New Guidance Aimed at Making VBAC Available to More Women - ACOG. [cited 2018Apr17]. Available from: <https://www.acog.org/About-ACOG/News-Room/News-Releases/2017/ACOG-Releases-New-Guidance-Aimed-at-Making-VBAC-Available-to-More-Women?p=1>
- Mozurkewich EL, Hutton EK. Elective repeat cesarean delivery versus trial of labor: a meta-analysis of the literature from 1989 to 1999. *Am J Obstet Gynecol* 2000;183:1187-97
- What is vaginal birth after cesarean (VBAC)? [Internet]. Eunice Kennedy Shriver National Institute of Child Health and Human Development. U.S. Department of Health and Human Services; [cited 2018Apr17].
- Green-top guideline no.45 Birth after previous caesarean birth. October 2015. Royal college of obstetricians and gynaecologists Available from: https://www.rcog.org.uk/globalassets/documents/guidelines/gtg_45.pdf
- Quiñones JN, Stamilio DM, Paré E, Peipert JF, Stevens E, Macones GA. The effect of prematurity on vaginal birth after cesarean delivery: success and maternal morbidity. [Internet]. *Obstetrics and gynecology*. U.S. National Library of Medicine; 2005 [cited 2018Apr18].
- Bano R, Mushtaq A, Adhi M, Saleem MD, Saif A, Siddiqui A, et al. Rates of caesarian section and trials and success of vaginal birth after caesarean sections in secondary care hospital. [Internet]. *JPMA. The Journal of the Pakistan Medical Association*. U.S. National Library of Medicine; 2015 [cited 2018Apr18].
- Urooj Malik, Shahina Ishtiaq, Asma Baloch. Frequency and safety of successful vaginal birth after previous single cesarean section; *Isra Medical Journal* 2016; 253-256.
- Taj G, Sohail N, Cheema SZ, Zahid N. Review of Study of Vaginal birth after Cesarean Section. *Annals of Surgery* 2008;14(1):13-16
- AbitbolAIM, Castillo I, Taylor UB, Rochelson BL, Shmoys S, Monheit AG. Vaginal birth after cesarean section: the patient's point of view. *Am Fam Physician* 1993; 47:129-34.
- Tahseen S, Griffiths M. Vaginal birth after two caesarean sections (VBAC-2)—a systematic review with meta-analysis of success rate and adverse outcomes of VBAC-2 versus VBAC- 1 and repeat (third) caesarean sections. *BJOG* 2010;117:5-19.
- Declercq ER, Sakala C, Corry MP, Applebaum S, Herrlich A. *Listening to mothers III: pregnancy and birth*. New York (NY): Childbirth Connection; 2013.
- National Institutes of Health Consensus Development Conference Panel. National Institutes of Health Consensus Development conference statement: vaginal birth after cesarean: new insights March 8-10, 2010. *Obstet Gynecol*. 2010;115:1279-95.
- Vaginal birth after previous cesarean delivery. *Practice Bulletin No. 115. American College of Obstetricians and Gynecologists. Obstet Gynecol*. 2010;116:450-63
- Barger MK, Dunn JT, Bearman S, Delain M, Gates E. A survey of access to trial of labor in California hospitals in 2012. *BMC Pregnancy Childbirth*. 2013;13:83
- Leeman LM, Beagle M, Espey E, Ogburn T, Skipper B. Diminishing availability of trial of labor after cesarean delivery in New Mexico hospitals. *Obstet Gynecol*. 2013;122:242-7.
- Wells CE. Vaginal birth after cesarean delivery: views from the private practitioner. *Semin Perinatol*. 2010;34:345-50
- Korst LM, Gregory KD, Fridman M, Phelan JP. Nonclinical factors affecting women's access to trial of labor after cesarean delivery. *Clin Perinatol*. 2011;38:193-216.
- Hamilton BE, Martin JA, Ventura SJ. *National vital statistics reports*. 5. Vol. 61. Hyattsville(MD): National Center for Health Statistics; 2012. Births: preliminary data for 2011.
- Hurley V, Brownlee S. Elective childbirth procedures in California: a close-up of geographic variation. Sacramento (CA): California Healthcare Foundation; 2011.
- Boyle A, Reddy UM. Epidemiology of cesarean delivery: the scope of the problem. *Semin Perinatol*. 2012;36:308-14.
- MacDorman M, Declercq E, Menacker F. Recent trends and patterns in cesarean and vaginal birth after cesarean (VBAC) deliveries in the United States. *Clin Perinatol*. 2011;38:179-92.
- U.S. Department of Health and Human Services; Office of Disease Prevention and Health Promotion. *Healthy People 2020*. Washington, DC.
- Declercq E, Young R, Cabral H, Ecker J. Is a rising cesarean delivery rate inevitable? Trends in industrialized countries, 1987 to 2007. *Birth*. 2011;38:99-104.