

## VBAC: Changes over Last 10 Years

Neha Gupta<sup>1</sup> · Arpita De<sup>1</sup> · Swaraj Batra<sup>1</sup>

Received: 31 July 2017 / Accepted: 22 February 2018 / Published online: 13 March 2018  
© Federation of Obstetric & Gynecological Societies of India 2018

### About the Author



**Dr Neha Gupta** is Associate Professor at Hamdard Institute of Medical Sciences and Research, New Delhi. She has active interest in colposcopy and minimally invasive surgery. She did her education from Delhi University and was associated with Sharda Hospital, Greater Noida, as Assistant Professor prior to joining HIMSR.

### Abstract

**Introduction** Vaginal birth after caesarean section (VBAC) has been historically studied to be a standard and a safe procedure with good successful results.

Dr Neha Gupta is a Associate Professor in the Hamdard Institute of Medical Sciences and Research, New Delhi, India; Dr Arpita De is a Assistant Professor in the Hamdard Institute of Medical Sciences and Research, New Delhi, India; Dr Swaraj Batra is a Professor in the Hamdard Institute of Medical Sciences and Research, New Delhi, India.

✉ Neha Gupta  
[docnehanigam@gmail.com](mailto:docnehanigam@gmail.com)

<sup>1</sup> Hamdard Institute of Medical Sciences and Research, G701, Prateek Stylome, Sector 45, Noida 201301, India

**Aims** This study was conducted to determine changes in pattern of VBAC by the same author over a period of 10 years.

**Results** Data for 1 year between 2005–2006 and 2014–2015 were compared, and successful VBAC was found to be 74.46% in 2005–2006 period compared to only 34.42% in 2014–2015. Neonatal mortality and maternal morbidity were, however, much higher 10 years ago.

**Conclusions** It was concluded that better diagnostic techniques, awareness of patients and medico legal fear have led to safer health of mother and child and lesser incidence of VBAC over the last 10 years.

**Keywords** VBAC · Previous · Caesarean · Failed · Trial · Trends

## Introduction

Vaginal birth is the desire of every pregnant woman. Occasionally, it is not possible to proceed with vaginal birth due to foetal or maternal factors, and in such cases caesarean section is done to deliver the child. Lately, rates of caesarean section have been increasing in almost all institutes across the world [1–3]. Many reasons are attributed for this rise, especially use of electronic foetal and maternal monitoring and growing medico legal hassles [1, 4, 5]. For a second delivery after a previous caesarean section, guidelines suggest trial of labour in the majority of cases [6, 7]. Vaginal birth after caesarean section (VBAC) is a well-established procedure with good and proven success in indicated cases. A major requirement for trial of vaginal birth in such cases is a well-equipped centre with facilities for immediate operative procedure in case of any clinical signs of scar dehiscence or rupture. VBAC needs good monitoring and dedication from the medical team, and their willingness to attempt vaginal births, rather than an easy way out for a repeat caesarean section [8].

Several studies have been done to see the success of vaginal delivery after previous caesarean section and reasons for its failure in some cases where a repeat caesarean section was essential [9–11].

A similar prospective audit was done 10 years ago by the corresponding author over a period of one year, and data were analysed. Author repeated the study 10 years later in a different institute and compared the data with the previous data. This was done to analyse the change in rates of vaginal delivery in patients with history of previous caesarean section over the last 10 years and change in reasons for its failure, and the data were analysed to draw conclusions that can probably guide our way forward in such cases.

## Aims and Objectives

1. To study the rates of vaginal delivery in patients with a previous caesarean section and reasons for its failure in cases that need a repeat caesarean section.
2. To compare the results with a similar study done 10 years ago by the same author.

## Materials and Methods

This study was done at a teaching hospital in Delhi. Data were collected on all deliveries that occurred between November 2014 and October 2015 over a period of 1 year. Records were made on total number of deliveries, number

of caesarean section among them, total number of previous caesarean sections delivered and their methods of delivery. Reason for caesarean section in cases of previous caesarean section was documented, and complications in cases that were delivered vaginally were noted.

All data was then compared with a similar audit that was done 10 years ago by the corresponding author. That study was done in a government teaching hospital in Delhi between April 2005 and March 2006 as a part of thesis research, and data between the two studies were compared. Conclusions were formed, and improvements were suggested to reduce the growing disparity.

## Results

Present study was carried out in Department of Obstetrics and Gynaecology at Hakeem Abdul Hamid Centenary hospital (HAHC), Jamia Hamdard, New Delhi, from November 2014 to October 2015.

One thousand and eighty-five deliveries occurred in the study period. Total number of caesarean section among them was 339 (31.2%). Total number of pregnancies with previous caesarean section was 125 (11.6%). The number of patients with previous one caesarean section was 111 (10.2%). Fourteen patients were excluded from the study as they had history of more than one previous caesarean section. Out of 111 patients with previous one caesarean section, 26 were excluded from the study as they were taken for elective repeat caesarean section. Reasons for elective caesarean section are as per Table 1.

Eighty-five (76.5%) patients were offered trial of labour, but twenty-four (21.6%) patients were not willing to undergo a trial of labour and underwent repeat caesarean section. Trial of labour was given to sixty-one (61) patients with history of previous one caesarean section.

Trial of labour was successful in 21 patients (34.5%), while 40 patients (65.5%) had to be taken up for emergency caesarean section. Out of 111 total pregnancies with previous one caesarean section, 18.9% had a successful vaginal delivery. Most common reason for emergency caesarean section was foetal distress (Table 2).

No maternal deaths were reported in all patients subjected to trial of labour. Most common maternal morbidity was fever in both groups (9.5% vs. 10%).

There were no neonatal deaths in the study period.

On comparing these data with an audit done at a government teaching hospital 10 years ago for thesis work, author noted many differences over last 10 years.

Total deliveries done during one year period (April 2005 to March 2006) at Kasturba hospital (KH), New Delhi, were 12629. Differences in statistics between the two periods are mentioned in Table 3.

**Table 1** Indication of elective repeat caesarean section

Indication	Number	Percentage (%)
Cephalo-pelvic disproportion	7	26
Breech presentation	3	11.5
Transverse lie	2	7.6
Twins	3	11.5
Antepartum haemorrhage	3	11.5
Previous myomectomy	1	3.8
Short inter-conception period	3	11.5
Gestational diabetes with deranged Doppler	3	11.5
Preterm (30 wks) with eclampsia	1	3.8
Total	26	100

**Table 2** Indication for emergency caesarean section

Indication	Number of cases	Percentage (%)
Foetal distress	19	47.5
Scar tenderness and signs of impending rupture	14	35
Failed progress of labour	7	17.5
Total	40	100

**Table 3** Statistical differences over last 10 years

	HAHC (2014–15)	KH (2005–06)
Total number of deliveries in 1 year	1085	12,629
Total number of previous 1 CS section	111 (10.23%)	312 (2.47%)
Elective repeat caesarean	26	124
Refusal for trial	24	NIL
Trial of labour	61 (54.95%)	188 (60.25%)
Successful VBAC	21 (34.42%)	140 (74.46%)

**Table 4** Demographic profile difference

Age (in years)	Parity		Socioeconomic status		Antenatal care						
	HAHC	KH	HAHC	KH	HAHC	KH					
< 20	0	3.7									
20–24	27.9	48.9	P1	73.7	53.2	Literate	11.47	68.6			
25–29	45.9	38.3	P2	24.6	31.4	10th pass	31.14	19.1	Booked	80.4	65
30–34	23	7.4	P3	1.7	10.6	12th pass	21.31	5	Unbooked	19.6	35
> 34	3.2	1.6	P4	0	4.8	Graduate and above	9.83	3			
Total				61			26.25	2.8			
					100						

**Fig. 1** Scar dehiscence

More number of deliveries were in 20–24 years age group (48.9%) 10 years ago, whereas more deliveries were in 25–29 years age group (45.9%) in the current study. Other differences in demographic profile are given in Table 4.

Maternal morbidity in successful VBAC was much higher 10 years ago with fever (15%), UTI (10%) and gaped episiotomy (12.8%) as major contributors. Comparable morbidity in current study was fever (9.5%), UTI (4.7%) and gaped episiotomy (9.5%).

Maternal morbidity in failed VBAC who had to be rushed for emergency caesarean section 10 years back were fever (14.5%), wound infection (16.6%) and scar dehiscence (6.2%). Comparable complications in the current study were fever (10%), wound infection (10%) and scar dehiscence (2.5%) (Fig. 1).

Neonatal mortality was nil in current study, whereas it was 0.014% in successful VBAC and 0.02% in failed VBAC group 10 years ago. Neonatal morbidity was also higher (37.5%) 10 years ago in neonates born after emergency caesarean section compared to current study (20%).

## Discussion

Delivery after previous caesarean section needs clinical supervision in view of scarring from old surgery. Reasons for caesarean section may be recurrent or non-recurrent.

Anatomical reasons like smaller pelvic outlet do not change in repeat pregnancy; hence, these pregnancies need repeat caesarean section. But many caesareans are done for foetal distress and other indications which might not persist in repeat pregnancy. Such pregnancies may be subject to trial of labour.

Historically, dictum “once a caesarean, always a caesarean” has been a subject of numerous trials and studies. Multiple investigators have attempted normal labour in previous caesarean sections and assessed success and complications [12, 13]. Most studies have shown good results in carefully monitored trials of labour. However, chances of repeat caesarean section are high as reasons may reappear in the repeat pregnancy. Also, in view of scar from a previous surgery, dehiscence can be a problem [7, 14].

This study was done to audit our results in delivery of patients with previous caesarean section.

Of a total of one thousand and eighty-five deliveries in the study period, our rate of caesarean section was 31.2%. Patients with previous one caesarean section were 111, out of which 26 were excluded as there were indications for repeat caesarean section. Most common reason for repeat elective caesarean section was cephalo-pelvic disproportion (26%).

Out of remaining 85 patients, 21.6% refused consent for trial of labour and instead opted for a repeat caesarean section. Sixty-one patients with previous one caesarean section underwent trial of labour and were included the study. Foetal distress was the most common indication in previous pregnancy for trial of labour, and it was also the leading reason for emergency caesarean section after failure of trial. Bladder adhesions were the most common operative findings in the repeat caesarean section. Scar dehiscence was seen in 1 patient (2.5%). No maternal deaths were seen in the current study. Neonatal intensive care admissions were seen in only 9.5% cases of successful VBAC and were seen in 20% cases in failed VBACs needing repeat caesarean section. Average duration of stay was much lower in successful vaginal deliveries and was higher in cases needing repeat emergency caesarean section.

On comparing these data with a similar audit done in a tertiary medical college in Delhi 10 years ago, significant difference in results was found. No patient refused trial of labour 10 years ago, while several patients refused trial of labour in the current study, probably due to lower socio-economic and education level of patients attending the government hospital. In the current study, almost 28% patients refused trial of labour. They were well educated, from a better socioeconomic group in society, seeking treatment in a semiprivate medical college hospital in Delhi. More number of deliveries were in younger age group in government hospital 10 years ago compared to semiprivate hospital now (20–24 years vs. 25–29 years.).

The majority of patients were illiterate 10 years ago (68.8%), compared to only 11% patients in the current study. More number of deliveries were unbooked 10 years ago (35%) compared to now (19.6%). Vaginal birth after previous caesarean was successful in 34.4% patients in the current study compared to 74.4% patients 10 years ago. Emergency caesarean section was conducted in more patients in current study (65.5%). Scar dehiscence was seen in more number of patients 10 years ago (6.5%) compared to only 2.5% patients in the current study. Maternal morbidity was more common 10 years ago compared to current study, and neonatal deaths were noted 10 years ago while no deaths were documented in the current study.

These findings show increased number of caesarean sections now, compared to 10 years ago. Probably, this reflects better diagnostic facilities with better monitoring of foetal distress. This also reflects better maternal and neonatal health in the current study. Government hospital 10 years ago had less monitoring for foetal distress; hence, more number of vaginal deliveries were conducted hoping for safe foetal and maternal health. In the process, several patients and neonates deteriorated and we had to deal with few unfortunate neonatal deaths. With good monitoring, now caesarean section is undertaken on any sign of foetal or maternal distress, thus improving results.

Similar findings have also been reposted from other parts of the world. Christmann et al. [15] in 2016 published findings from their study done at 5-year interval at a same centre in Switzerland and concluded that fewer patients were having successful VBAC. They attributed this change in trend to increasing demand for safety in pregnancy and childbirth. A German study published in 2014 found that current rate of VBAC is half of that in year 1990 (26.1% vs. 47.9%) [16].

Current study probably shows a reduced rate of VBAC over previous years in view of better foetal and maternal monitoring and better patient awareness. This, however, does not mean VBAC is not an option now, but just that we need to be more selective from patient to patient, as idea is to ensure a safe birthing experience for mother and child. Many centres in India and probably other developing nations still take VBAC as gold standard and end up compromising the health of baby and mother. In the light of current evidence, it is desirable that the safety of mother and foetus takes precedence over completing a successful trial of VBAC.

## Conclusion

Incidence of caesarean section has increased over last 10 years. More number of patients refuse trial of labour. Complications have reduced, probably due to better patient

selection. Trial of labour, however, remains a safe option in selected patients with proper monitoring.

#### Compliance with Ethical Standards

**Conflict of interest** All authors declare that they have no conflict of interest.

**Human Participants and Animals rights** This article does not contain any studies with human participants or animals performed by any of the authors.

**Informed consent** Informed consent was obtained from all individual participants included in the study.

#### References

1. Mylonas I, Friese K. Indications for and risks of elective cesarean section. *Dtsch Arztebl Int.* 2015;112(29–30):489–95.
2. Daniel CN, Singh S. Cesarean delivery: an experience from a tertiary institution in north western Nigeria. *Niger J Clin Pract.* 2016;19(1):18–24.
3. Samdal LJ, Steinsvik KR, Pun P, et al. Indications for Cesarean Sections in Rural Nepal. *J Obstet Gynaecol India.* 2016;66(Suppl 1):284–8.
4. Betrán AP, Ye J, Moller AB, et al. The increasing trend in Caesarean Section rates: global, regional and national estimates: 1990–2014. *PLoS ONE.* 2016;11(2):e0148343.
5. Prakash KC, Neupane S. Cesarean deliveries among Nepalese mothers: changes over time 2001–2011 and determinants. *Arch Gynecol Obstet.* 2014;289(2):421–7.
6. Simões R, Bernardo WM, Salomão AJ, et al. Federação Brasileira das Associações de Ginecologia e Obstetrícia (Febrasgo). Associação Médica Brasileira (AMB). Birth route in case of cesarean section in a previous pregnancy. *Rev Assoc Med Bras (1992).* 2015 61(3):196–202.
7. Balachandran L, Vaswani PR, Mogotlane R. Pregnancy outcome in women with previous one cesarean section. *J Clin Diagn Res.* 2014;8(2):99–102.
8. Cunningham FG, Bangdiwala SI, Brown SS et al. NIH consensus development conference draft statement on vaginal birth after cesarean: new insights. *NIH Consens State Sci Statements.* 2010 27(3):1–42.
9. Tsai HT, Wu CH. Vaginal birth after cesarean section—The world trend and local experience in Taiwan. *Taiwan J Obstet Gynecol.* 2017;56(1):41–5.
10. Knight HE, Gurol-Urganci I, van der Meulen JH, et al. Vaginal birth after caesarean section: a cohort study investigating factors associated with its uptake and success. *BJOG.* 2014;121(2):183–92.
11. Bangal VB, Giri PA, Shinde KK, et al. Vaginal birth after cesarean section. *N Am J Med Sci.* 2013;5(2):140–4.
12. Lundgren I, Healy P, Carroll M, et al. Clinicians' views of factors of importance for improving the rate of VBAC (vaginal birth after caesarean section): a study from countries with low VBAC rates. *BMC Pregnancy Childbirth.* 2016;16(1):350.
13. Li WH, Yang MJ, Wang PH, et al. Vaginal birth after cesarean section: 10 years of experience in a tertiary medical center in Taiwan. *Taiwan J Obstet Gynecol.* 2016;55(3):394–8.
14. Kayani SI, Alfirevic Z. Uterine rupture after induction of labour in women with previous caesarean section. *BJOG.* 2005;112(4):451–5.
15. Christmann-Schmid C, Raio L, Scheibner K, et al. Back to “once a caesarean: always a caesarean”? A trend analysis in Switzerland. *Arch Gynecol Obstet.* 2016;294(5):905–10.
16. Kyvernitakis I, Reichelt J, Kyvernitakis A, et al. Trends of vaginal birth after cesarean delivery in Germany from 1990 to 2012: a population-based study. *Z Geburtshilfe Neonatol.* 2014;218(5):203–9.