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Chapter

Vaginal Birth After Caesarean (VBAC)

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Abstract

The rising rate of caesarean section has implications in the reproductive performance of a woman and increases the likelihood of complications during repeat operations, whether they are planned or performed on an emergency basis. A successful vaginal delivery after caesarean is associated with increased maternal satisfaction, reduced caesarean section rate, and appears to be cost effective. There is a need for careful selection of women that are willing to attempt vaginal birth after caesarean with a clear set of local protocols to increase overall success rate, reduce litigation and improve neonatal outcome. The benefits and risks of planned vaginal birth after caesarean and elective repeat caesarean section should be discussed in detail with the woman during antenatal care and reemphasized at admission to the labour ward. A decision to embark on VBAC should be free from coercion with full informed consent as the bedrock for such a decision. Facilities offering vaginal birth in women with prior caesarean delivery should be equipped with 24-hour standby emergency caesarean section capability. The intrapartum care should be carefully tailored to meet the woman's need with support from the health care team. Every obstetrics unit should debrief women after delivery irrespective of the outcome and should conduct regular audits to improve the care of women with previous caesarean sections.

Keywords: vaginal birth after caesarean (VBAC), elective repeat caesarean section (ERCS), trial of labour after caesarean (TOLAC), successful VBAC, uterine rupture

1. Introduction

Vaginal Birth After Caesarean (VBAC) is one of the most contentious topics in obstetrics, therefore physicians and health workers in maternal health must navigate the complexity of the pros and cons when advising and counselling prospective mothers that wish to consider the vaginal route of delivery after a caesarean [1]. The increased rates of caesarean section and the short- and long-term complications thereof have made VBAC a reasonable and cost-effective alternative to planned Elective Repeat Caesarean Section (ERCS) [2]. The single most common indication for Caesarean Delivery (CD) in several settings in both developing and developed countries is a previous caesarean section and VBAC has the potential to plateau or flatten the exponential trajectory of CD [3]. However, the contribution of VBAC is jeopardised by the current upsurge of Caesarean Delivery on Maternal Request

(CDMR), increased litigation climate and the cloud of caesarean sections that are generally classified as unnecessary by the World Health Organisation (WHO) [4–6]. The pendulum in the trend in VBAC and ERCS continues to swing back and forth with the debate concerning the acceptable ideal caesarean section rate persisting despite the recommendation by WHO. It is believed that the ideal caesarean section rate should be between 10 and 15% [7], however, in the recommendations by WHO to reduce unnecessary caesarean sections using nonclinical interventions, it was noted that these quoted rates are population based and that the panel conclusions were from temporally limited data in a European context [6]. The rising caesarean section rate has been deemed medically unnecessary and potentially harmful and it is predicted that nearly one third (29%) of all deliveries might be by caesarean section by 2030 [8]. In Latin America and the Caribbean, the proportion of caesarean section has outnumbered vaginal delivery and the projected rate by 2030 will likely to be 63, 54, 50 and 45% in Eastern Asia, Latin America and Caribbean, Western Asia and Australia and New Zealand respectively [8]. Therefore, it is pertinent to closely study the causes of high caesarean section rates with the aim of mitigating them, while encouraging VBAC as an alternative.

2. Evolution of VBAC

In 1916, Edwin B. Cragin in his classic publication on conservatism in obstetrics opined that once a caesarean delivery always a caesarean delivery which was later coined as the Dictum of Cragin. He argued that following surgical incision on the anterior abdominal wall and the uterine wall to deliver a fetus should rely on such method for future deliveries. In his article, he highlighted that the risk of uterine rupture is high in VBAC as the uterus is unable to withstand the shear stress of uterine contractions [9, 10]. The practice (of repeat caesarean delivery) was the standard of care until the late 1980s when its reputation was questioned by the National Institutes of Health in Bethesda, Maryland following an exponential surge in caesarean delivery rates and a review by the American Congress of clinical Obstetrics and Gynaecology which modified this recommendation and advocated that a woman can attempt vaginal delivery after one previous caesarean section [9, 11]. There has been remarkable progress in caesarean section techniques with Kerr's incision on the lower segment being the standard as opposed to the classical incision and caesarean section is now generally considered as a safe procedure with the risk of future uterine rupture considerably very low [12]. Evidence from systematic reviews and clinical guidelines suggest that planned VBAC is a safe and suitable method of delivery for most women after uncomplicated previous caesarean delivery [13–15].

3. Updated data

There is varied data across different settings concerning the rate of VBAC with several compounding factors. VBAC rates are generally reported to range from 49–87% [13]. In scrutiny of pregnancy outcomes following one previous caesarean section at Mafraq Hospital Abu Dhabi, Balachandran et al. [16] discovered that 76 percent were candidates for VBAC after careful patient selection and VBAC success rate was 83.47% with only 12.6% deemed to have failed VBAC. However, VBAC rates are said to be very low in low-income countries because of lack of facilities and manpower for

adequate fetal monitoring [17]. In a recent Pretoria study VBAC rate is quoted to be as low as 36% and lack of appropriate counselling on delivery options has been found to be a major culprit [18]. In a retrospective case study and online survey in Romania [19] VBAC rate was less than 1% which was attributable to lack of advocacy and promotion for VBAC, poorly trained health care workers and birth practices that favour repeat caesarean delivery, while average Europe VBAC rates are quoted to be between 20 and 50% [20].

4. Definition of terms

Vaginal Birth After Caesarean (VBAC): Vaginal delivery following one or more previous CD [21].

Planned VBAC: The Royal College of Obstetricians and Gynaecologists defined planned VBAC as an intended mode of delivery of any woman who previously had caesarean section (s) who opts to deliver vaginally instead of an Elective Repeat Caesarean Section (ERSC) [22].

Trial of Labour After Caesarean (TOLAC): This refers to the planned attempt to deliver vaginally following a previous caesarean birth, regardless of the outcome [23].

Successful VBAC: A vaginal delivery (spontaneous or assisted) following planned VBAC is termed as successful, whereas delivery by emergency caesarean section during the labour process is considered unsuccessful. Technically a vaginal delivery by a patient with previous caesarean section(s) even when not planned will be considered a successful VBAC [22, 23].

Elective Repeat Caesarean Section (ERCS): A planned caesarean delivery by a woman who had prior caesarean section(s).

Primary Caesarean Section: This is considered as the first delivery by caesarean section irrespective of the woman's parity [21–24].

Intervals

1. **Interpregnancy interval (IPI):** This is the time period between delivery of the last child and conception of the next pregnancy [25].

2. **Interdelivery interval:** The period of time from the last delivery to the onset of labour or a presumed expected date of delivery [26, 27].

Uterine rupture:

1. **Complete or symptomatic:** The complete disruption of the entire thickness of the uterine wall associated with extrusion of fetal parts and intraamniotic content in the peritoneal cavity [28, 29].

2. **Partial or uterine dehiscence:** This term is used when the uterine serosa is intact despite disruption of the uterine muscle [28, 29].

5. VBAC predictive factors

The success rate of planned VBAC has been quoted to be between 75 and 90% [22,] and consensus from evidence-based guidelines and systematic reviews have endorsed

VBAC as a safe alternative for delivery for majority women with prior single lower segment CD, with a complication risk of less than 1% [14, 21–23]. Therefore, there is a need during prenatal care to carefully select women, counsel them appropriately and implement a VBAC checklist which will improve success and prevent complication and litigation [21, 22, 30]. Several factors have been found to positively predict successful VBAC and this should be carefully assessed during the entire prenatal care. Evidence based research has established the followings factors to impact positively on the success of VBAC:

5.1 Maternal will

Prospective parturient(s) who are well motivated to have VBAC after careful selection and counselling is associated with a positive outcome and higher chances of successful VBAC. This has been found to be critical in patients that undergo VBAC when compared to patients that are unwilling to try a vaginal delivery [21, 22, 31, 32].

5.2 Body Mass index < 30 kg/M2

VBAC success rate is inversely proportional to increasing BMI. VBAC rate decreases in obese women, however, appears unchanged in overweight women [33]. Weight fluctuation between pregnancy is correlated with decrease VBAC rates especially among women who had normal BMI in previous pregnancy [32].

5.3 Single previous lower segment caesarean delivery

The risk of uterine rupture associated with a single uncomplicated lower segment caesarean section is very rare. The likelihood of uterine rupture is approximately one in 200 (0.5%) women [21, 22]. Caution should be exercised in women who have had a complicated lower segment caesarean section despite insufficient data on extension or inverted T or a J incision. Recommended mode of delivery in these women should be decided on case-by-case basis with the woman fully aware of risk of uncertainty [21, 22, 33]. Previous classical uterine incision is associated with a higher risk (5% or greater) of uterine rupture; therefore, this incision type and previous uterine rupture are absolute contraindications to VBAC, and all such women should be offered elective repeat caesarean section [21, 34–36]. There is conflicting evidence on the likelihood of uterine rupture on women with two previous lower segment caesarean sections. Women with two previous uncomplicated lower segment caesarean deliveries have VBAC success rates of 62–75% which is like single lower segment caesarean sections especially among women with previous vaginal delivery or previous successful VBAC [32]. However, it is reasonable to err on the side of caution and offer such women elective repeat caesarean section due to the conflicting data.

5.4 Non recurrent indication for CS

Indication of the previous caesarean section can influence the outcome of VBAC. Non recurrent indications are associated with higher rates of successful VBAC. Sixty percent of women with cephalopelvic disproportion as the indication for previous caesarean delivery will achieve vaginal delivery, while 89% will achieve vaginal delivery for non-recurrent indications [32].

5.5 Previous successful vaginal birth before or after VBAC

Prior vaginal delivery is the strongest positive predictor of VBAC. VBAC Success rate in women with a prior vaginal delivery is documented to range between 75 and 85%, while a prior successful VBAC gives the maximum success rate of between 90 and 93% [21–23, 32, 37].

5.6 Adequate inter pregnancy or inter delivery interval

The hysterotomy exact mechanism of healing is still blur regeneration and fibrosis both entertained. According to Buhimschi et al. [38], the healing and visco-elastic behaviour of a surgically wounded myometrium depends on and varies with genetic and phenotypic properties. According to the CORONIS multicentered 3 year follow up randomised control trial, uterine rupture and uterine scar dehiscence following a single or double layer closure were similar in patient that had TOLAC [39]. Therefore, in a case to standardised caesarean section a single layer closure of the uterus is recommended [40]. The recommended optimal interval to guaranty uterine scar integrity and to reduce the risk of uterine is 6 and 18 months for interpregnancy and Interdelivery intervals respectively [27, 32]. However, a recent retrospective study recommended an Interdelivery interval of 24 months to attempt VBAC [26].

5.7 Singleton and cephalic presentation considered favourable for VBAC

There is high success rate in women attempting VBAC with a singleton fetus in cephalic presentation with estimated fetal weight of less than 4000 g, although there are studies to demonstrate that women undergoing TOLAC with one prior low transverse caesarean delivery with twin gestation have similar outcomes [21–23, 32]. TOLAC in twin gestation with no prior vaginal delivery is associated with very low successful VBAC rate following evidence from a recent cohort report [41]. However, the Royal College of Obstetricians and Gynaecologist threshold for estimated fetal weight is 3800 g [22].

5.8 Spontaneous onset of labor has better prognosis for VBAC

Spontaneous onset of labour in a woman who is planned for VBAC has been associated with higher success rates and less complications compared with artificial initiation or augmentation of uterine contractions. In a recent meta-analysis of observational studies oxytocin use was associated with higher rate of uterine rupture and recommended cautious monitoring of oxytocin use during TOLAC [42].

6. VBAC check list

A VBAC check list will enable obstetricians and physicians in women's health to carefully select patients, improve communications, and avoid litigation from possible acts of omission and lack of proper documentation (**Table 1**). Below is an example of Queensland Clinical Guideline for Vaginal birth after caesarean (VBAC) which was adopted by Royal College of Obstetricians and Gynaecologists (**Table 2**) [21, 22].

Appendix A: Example VBAC counselling checklist

An example checklist which can be used by clinicians when counselling women about birth after previous CS.

Contraindications for VBAC			Tick when discussed
Contraindications include: previous uterine rupture; history of classical caesarean section; contraindications to vaginal birth which apply regardless of history of caesarean (e.g. placenta praevia)			<input type="checkbox"/>
If complex caesarean scar (e.g. inverted T or J), or history of multiple caesarean sections, seek expert advice			<input type="checkbox"/>
Likelihood of VBAC		VBAC rate	
One previous caesarean section, no previous vaginal birth		72–75%*	<input type="checkbox"/>
One previous caesarean section, at least one previous vaginal birth		85–90%*	<input type="checkbox"/>
Induced labour, no previous vaginal birth, BMI greater than 30, previous caesarean for dystocia.		If all factors present, 40%	<input type="checkbox"/>
Maternal risks of planned VBAC and ERCS			
Risk	Planned VBAC	ERCS	
Uterine rupture*	0.5%	<0.02%	<input type="checkbox"/>
<i>*If uterine rupture occurs, 14–33% risk of hysterectomy and 6.2% risk of perinatal death</i>			
Serious complications in future pregnancies	Not applicable if VBAC	Increased likelihood of placenta praevia/morbidly adherent placenta	<input type="checkbox"/>
Maternal mortality	0.004%	0.013%	<input type="checkbox"/>
Fetal risks of VBAC and ERCS			
Risk	Planned VBAC	ERCS	
Antepartum stillbirth beyond 39+0 weeks awaiting labour	0.1%	Not applicable if ERCS at 39 weeks	<input type="checkbox"/>
Hypoxic ischaemic encephalopathy (HIE)	0.08%	<0.01%	<input type="checkbox"/>
Perinatal mortality	0.13%	0.05%	<input type="checkbox"/>
Intrapartum care recommendations			
Recommended continuous electronic fetal monitoring in labour			<input type="checkbox"/>
One-on-one midwifery care			<input type="checkbox"/>
Birth in suitable facility			<input type="checkbox"/>
Written information leaflets provided: VBAC <input type="checkbox"/> ERCS <input type="checkbox"/> Other <input type="checkbox"/>			

Table 1.

Queensland Clinical Guideline Vaginal birth after caesarean (VBAC) which was adopted by Royal College of Obstetricians and Gynaecologists (RCOG) [21, 22].

7. VBAC predictive score

There are several predictive tools and models to improve the outcome of VBAC which are deployed into clinical practice. However, this will not substitute careful clinical selection and judgement. The Flamm and Geiger VBAC risk score is a simple

Appendix B: Example management plan checklist

Example plan which can be completed by clinician and woman to document plan for birth and potential circumstances which may arise.

Management plan in the event of...			
Preterm labour	<input type="checkbox"/> VBAC	<input type="checkbox"/> Emergency CS	
Spontaneous labour before ERCS date	<input type="checkbox"/> VBAC	<input type="checkbox"/> Emergency CS	<input type="checkbox"/> Depends on situation Provide details:
No spontaneous labour by 41 weeks	<input type="checkbox"/> Induction of labour Provide details below in induction of labour row		
	<input type="checkbox"/> ERCS Provide details:		
	<input type="checkbox"/> Expectant management Provide details:		
	Details of induction of labour		
Use of oxytocin in labour			
ERCS booking details			
Additional comments			

Table 2. Queensland Clinical Guideline Vaginal birth after caesarean (VBAC) which was adopted by Royal College of Obstetricians and Gynaecologists [21, 22].

Parameter(s)	History and clinical parameters	Scores
1. Maternal age	<40 years	2
	>40 years	0
2. Vaginal birth history	Before and after first caesarean	4
	After first caesarean	2
	Before first caesarean	1
	None	0
3. Indication for caesarean	Failure to progress	0
	Other reasons	1
4. Cervical effacement (%)	>75	2
	25-75	1
	<25	0
5. Cervical dilation at admission (cm)	>4	1
	<4	0

Table 3.
Flamm and Geiger model VBAC risk score [43].

and popular tool of prediction of successful VBAC which uses 5 parameters with scores allocated as shown in **Table 3** [43]. In an analysis of the predictiveness and positive correlation of the Flamm and Geiger scoring system in a prospective observational study, it was found that most women with scores of <3 at the time of admission had emergency caesarean section and successful VBAC accounted for only 16%, while score of >8 had a success VBAC rate of 100% and the authors concluded that the application of the Flamm and Geiger scoring gave a fair judgement of successful VBAC rates [43]. In a much larger recent study in a resource constraint setting, the Flamm and Geiger admission criteria had similar outcomes, however decision also included factors like estimated fetal weight, interpregnancy interval and gestational age [44]. The Maternal-Fetal Medicine Unit Network has a VBAC calculator which incorporated maternal height, weight, pre-pregnancy BMI and devoid of race which is ethnicity. The predictive score appears to be similar to the Flamm and Geiger model [45]. <https://mfmunetwork.bsc.gwu.edu/PublicBSC/MFMU/VGBirthCalc/vagbirth.-html>

<https://www.mdcalc.com/calc/3317/vbac-risk-score-successful-vaginal-delivery-flamm-model>

8. VBAC versus ERSC

The risk versus benefit of VBAC and ERCS should be highlighted with full disclosure to any prospective mother who had a prior caesarean delivery. The decision for a mother to attempt either routes should be based on informed consent and be free from coercion.

The following are evidence-based benefits and risks for VBAC and ERCS (**Tables 4–7**):

Maternal [22, 23, 46]	Fetal and neonatal [21–23, 47]
<ul style="list-style-type: none"> • 75 chances of successful vaginal delivery 	<ul style="list-style-type: none"> • Reduce risk of transient respiratory distress (2–3%)
<ul style="list-style-type: none"> • Shorter hospital stays 	<ul style="list-style-type: none"> • Increase likelihood of breast feeding at birth and continued postpartum period
<ul style="list-style-type: none"> • Faster recovery 	
<ul style="list-style-type: none"> • Reduce chances of ERCS in the future and increase likelihood of future vaginal birth 	
<ul style="list-style-type: none"> • Increase maternal satisfaction 	
<ul style="list-style-type: none"> • Reduce maternal mortality rate (4/100,000) 	

Table 4.
Benefits of planned VBAC [21–23, 46].

Maternal [21–23, 48, 49]	Fetal and neonatal [21–23, 48, 49]
<ul style="list-style-type: none"> • Increase risk of emergency Caesarean delivery (25–28%) with more morbidity compared with ERCS 	<ul style="list-style-type: none"> • Increase risk (0.1%) of antepartum still birth beyond 39 weeks while awaiting labour (similar rate in nulliparous women)
<ul style="list-style-type: none"> • 1 in 200 (0.5%) risk of uterine rupture (risk is higher with Augmentation and induction of labour) 	<ul style="list-style-type: none"> • Increase risk (0.08%) of hypoxic ischaemic encephalopathy (HIE)
<ul style="list-style-type: none"> • Increase risk of anal sphincter injury in VBAC (5%) and increase to 39% in instrumental delivery. This is dependent on the birth weight 	<ul style="list-style-type: none"> • Increase risk (0.04%) delivery related perinatal death

Table 5.
Risk of planned VBAC [21–23, 48, 49].

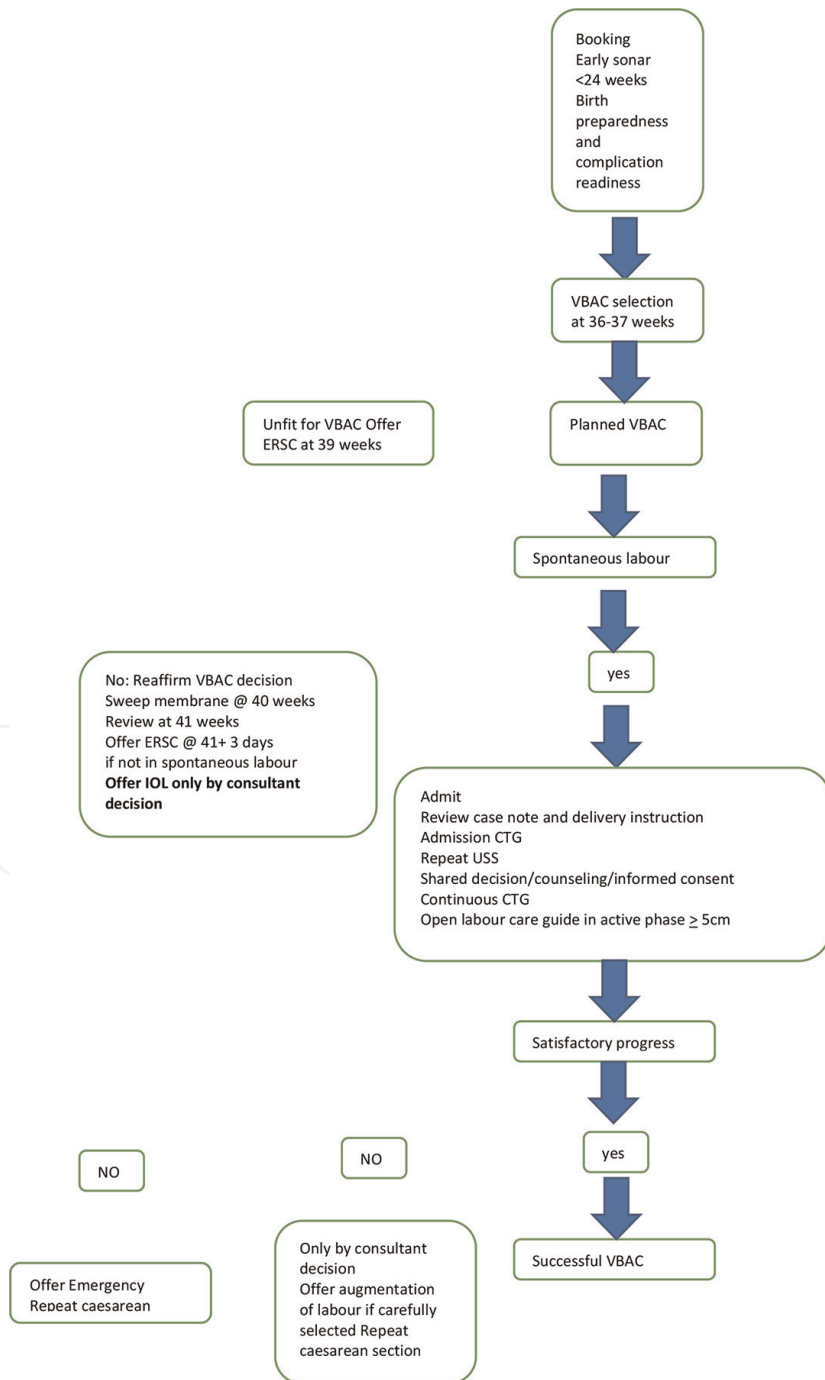
Maternal [21–23, 50, 51]	Fetal and neonatal [21–23, 50, 51]
<ul style="list-style-type: none"> • Extremely low risk (<0.02) of uterine rupture 	<ul style="list-style-type: none"> • Reduce risk (0.01%) of HIE
<ul style="list-style-type: none"> • A known and planned delivery date and reduce likelihood of emergency caesarean section 	<ul style="list-style-type: none"> • Lower rate (0.05%) of perinatal death
<ul style="list-style-type: none"> • In the short time- Reduces the risk of pelvic organ prolapse and urinary incontinence (this depends on the number of vaginal births) 	
<ul style="list-style-type: none"> • Offers additional opportunity of sterilization if fertility is no longer desired. Counseling and consent should be performed at least 2 weeks before delivery because of high level of regrets compared with interval procedure 	

Table 6.
Benefits of planned ERCS [21–23, 50, 51].

Maternal	Fetal and neonatal
<ul style="list-style-type: none"> • Reduce potential in future conception • Long recovery 	<ul style="list-style-type: none"> • Decrease likelihood of breast feeding • Increase transient respiratory morbidity (4-5%)
<ul style="list-style-type: none"> • Increase likelihood of future caesarean delivery, placenta previa and placenta accreta spectrum • Increase risk of maternal death (13/100,000) 	

Table 7.
Risk of planned ERCS [21-23, 50, 51].

9. Proposed guideline of MCH (Obstetrics division) for VBAC



10. Intra partum monitoring of VBAC

Intrapartum monitoring for women undergoing TOLAC required a concise and structured plan to increase success rates, reduce morbidity and litigation from possible omission and lack of recognition of potential or actual uterine rupture. The maternity unit should be equipped with a standby 24-hour readiness for caesarean delivery with access to immediate neonatal care. The Obstetric team and the team leader preferably the unit consultant/the consultant on call should be notified immediately when a woman presents for a planned VBAC. All effort should be made to review all her case notes and the birth plan as documented during the antenatal care and allow the woman to reaffirm her decision to continue with the original plan or opt out for caesarean section [21–23]. It is appropriate to put in an intravenous canula and collect blood for a full blood count and blood group with the serum saved for access to immediate crossmatch if needed and oral intake should be restricted to clear fluid. The woman should be placed on continuous electronic fetal monitoring because an abnormal fetal rate is the most consistent finding in women who have uterine rupture [22, 51]. A one-to-one midwifery support and continuous care is associated with improve birth outcome and this should be the norm in all facilities that allow women to attempt vaginal delivery with prior caesarean. It is recommended to perform another vaginal examination once the woman is in active phase, open a labour care guide and repeat vaginal examinations every 4 hours. It is important to note that uterine rupture, which is the disruption of the uterine muscle, with or without the serosa [52] can occur at any stage of labour and they are no reliable clinical markers for early detection [22, 51, 52]. A prolonged and profound bradycardia correlates with more than 80% of uterine rupture. A classic triad of pain, vaginal bleeding and fetal heart abnormalities may only be present in about 10% of women and most likely a late sign. Nonspecific heart rate abnormalities might need to be interpreted in the context of the woman and other obstetrics conditions. However, the following nonspecific signs should be closely monitored. These are abdominal pain in-between contractions, acute onset of uterine scar tenderness, caseation of previously efficient uterine contractions, prolonged first or second stage of labour, haematuria, loss of station, easier palpation of fetal parts, shoulder tip or chest pain in absent of vaginal bleeding and evidence of maternal tachycardia and shock [22]. Where uterine rupture is suspected, the obstetrics team should aim at category 1 caesarean section. The third stage of labour should be managed based on local guideline for active management of the 3rd stage of labour. There are no contraindications to use of analgesia both systemic and regional in women during TOLAC [51].

11. VBAC in special clinical scenarios

Some clinical scenarios are a source of potential debate and management may vary according to local protocols, health workers experience, litigation climate and most importantly the women's preferences to mode of delivery.

11.1 Twin gestation

Uncomplicated twin gestation with the cephalic presentation in the leading twin has been found to have similar successful VBAC rates compared with singleton

pregnancy [53–55]. However, caution should be taken for mother with twin gestation requesting for VBAC because of uncertainty regarding the safety of planned VBAC in these group of women. Ford et al. showed an increase (0.9%) scar rupture compared with the lower value in singleton with one previous lower segment scar [51, 55]. In a recent multicenter retrospective cohort study with a sample size of 160 women with twin A in vertex position with a single previous lower segment caesarean section, Peled et al. [56] stated that successful VBAC in selected twin was achieved in 86.3% while Levin et al. [41] reported a success VBAC rate of 31.3% in women with twins who attempted VBAC with no prior vaginal delivery.

11.2 Augmentation and induction of labour

Several studies [57, 58] have reported increased risk of uterine rupture in women who had either augmentation or induction of labour. However, there are inadequate and underpowered studies from randomised controlled trials concerning these clinical dilemmas. Therefore, when considering augmentation or induction of labour in patients with one prior lower segment caesarean section, the risks and benefits should be borne in mind by the clinician and discussed with the woman [51]. In an observational meta-analysis of 14 studies [42] and a total of 48,457 women that underwent TOLAC, the rate of uterine rupture after induction was estimated to be about 2.2% which is which is a more than 4-fold increase in rate of uterine rupture when compared to an unstimulated uterus. Prostaglandins carry the greatest risk of rupture in comparison to mechanical methods and oxytocin augmentation. In a recent randomised trial to compare controlled release dinoprostone vaginal insert and foley's catheter for labour induction after one previous caesarean delivery, the induction delivery interval was shortened with dinoprostone, however, the rate of similar maternal satisfaction is similar [59]. The decision to stimulate the uterus either by artificial initiation or enhanced weak contraction in a patient undergoing TOLAC should be taken at the highest level of seniority, preferably by a specialist obstetrician.

11.3 Two or more previous CS

The outcome of planned VBAC in two or more prior caesarean sections is associated with low success rates and high rates of uterine rupture and greater catastrophic morbidity compared with women with one prior lower segment caesarean section [51]. The Royal College of Obstetricians and Gynaecologists cautiously states that VBAC can be considered in a pregnant woman at term with 2 previous uncomplicated lower segment caesarean sections after detailed informed consent by the consultant obstetrician but is contraindicated in a patient with 3 previous caesarean sections [22]. A case–controlled study that compared TOLAC and ERSC after 2 prior caesarean section found similar maternal and neonatal morbidity, however the uterine rupture rate was 1.16% compared with none in the ERSC group [60].

11.4 Preterm pregnancy

Preterm delivery in patients with prior caesarean section has been associated with lower success rates as reported in a multicenter trial retrospective study in preterm deliveries [61]. In patients with either fetal abnormalities or fetal demise in the mid trimester and prior caesarean section, options of hysterotomy, dilatation and curettage and medical induction of labour have not been randomised in any study [51].

Misoprostol has been reported to be successful in mid trimester termination of pregnancy for both women with and without previous caesarean section [62, 63]. A reasonable option is to use misoprostol and mifepristone, or a combination with intracervical balloon catheter can be carefully tailored to achieve vaginal delivery [51, 63].

11.5 Post date

There is evidence that the still birth rate at or after 39 weeks is higher (1.5–2-fold) in women with previous caesarean delivery compared to women with unscarred uterus. Data are not adequate to recommend delivery at this gestational age, more so that induction of labour is associated with reduced VBAC success rate and increased complications [22, 51]. If spontaneous labour has not occurred at 41 weeks, the RCOG recommends that the woman is reviewed by the senior obstetrician to reassess her options for membrane sweep, induction of labour or ERSC and provisional date for ERSC offered at 40 + 10 weeks. ACOG recognises that the likelihood of success VBAC may be less beyond 40 weeks but that should not be sole indication to preclude TOLAC [22, 23]. In a close analysis of gestational age and association with successful VBAC, Hackler et al. [64] found a bimodal distribution of high success rate between late preterm (34–36 weeks) and late term (41–42 weeks). The proportion of women that will experience spontaneous labour between 40 – 40 weeks +6 day is quoted to be more than 32% and 16% between 41 – 41 weeks +6 days [65]. Therefore, it would be reasonable to allow more than 40% of women to present in spontaneous labour if they desire to have a VBAC.

12. Contraindications to VBAC

Careful review of patient history, case notes, surgical notes, delivery plan and meticulous evaluation from prenatal care and at labour ward suit will help clinicians to tease out women that are not suitable for VBAC. Contraindications to VBAC are previous uterine rupture, classical caesarean section, and other contraindications to vaginal delivery like major degree placenta previa [21–23].

In a previous uterine rupture, there is a 5% or more recurrent rupture if vaginal delivery is attempted. There is insufficient evidence on the safety of VBAC in women who had a history of complicated scars like inverted T and J incisions and inadvertent uterine extension at primary incision, significant uterine surgery like myomectomy or any unification procedure, fetal macrosomia (estimated fetal weight > 3.8 kg) and breech presentation [21–23]. These complicated scars should be documented in the woman surgical notes and handcard and should be regarded as a contraindication to VBAC in future pregnancy. Maternal refusal should be considered an absolute contraindication to VBAC, and the prospective mother has the right to refuse VBAC during antenatal and intrapartum care. Epidural anaesthesia is not contraindicated in women with planned VBAC and should be offered to women on request where feasible [51].

13. Complications of VBAC

- The following complications for TOLAC and women who planned to have VBAC have been highlighted throughout the text and will be listed here for easy recall.

- Uterine rupture
- Major maternal morbidity (Hysterectomy, blood transfusion, genitourinary injuries)
- Maternal death
- Major perinatal morbidity (Fetal acidosis, HIE)
- Perinatal death

14. Conclusion

VBAC has clinical and public health importance with the overall aim of reducing caesarean section rate and its short- and long-term complications. There is a need to prevent unnecessary primary caesarean sections to curtail the alarmingly rising rates of caesarean sections in developing and developed countries. Women with a prior single lower segment caesarean section should be carefully selected during prenatal care and offered the option of planned VBAC. The use of check list, VBAC predictive score and scrutiny of surgical and clinical notes is a safe way to carefully select prospective mothers and improve VBAC success rates and eliminate complications related to VBAC. Every facility should implement regular audits to reflect on case management, improve patient selection and VBAC success rate.

Note


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