



# FOGSI - ICOG

## Good Clinical Practice Recommendations GCPR

### Birth After Cesarean Section



Convenor – Mitra Saxena      Co-Convenor – Abha Rani Sinha

Mentors – Hrishikesh D Pai, Madhuri Patel, Laxmi Shrikhande

Advisors – Sanjay Gupte, Hema Divakar

National Co-ordinators – CN Purandare, Rishma Dhillon Pai,

Nandita Palshetkar, Jaydeep Tank

Co-ordinator – Surekha Tayade

**PRACTICAL OBSTETRICS COMMITTEE**

# FOGSI-ICOG Good Clinical Practice Recommendations (GCPR)

## Birth after Cesarean Section

*Convenor*—Mitra Saxena    *Co-Convenor*—Abha Rani Sinha

*Mentors*—Hrishikesh D Pai, Madhuri Patel, Laxmi Shrikhande

*Advisors*—Sanjay Gupte, Hema Divakar

*National Coordinators*—CN Purandare, Rishma Dhillon Pai,

Nandita Palshetkar, Jaydeep Tank

*Coordinator*—Surekha Tayade

## Practical Obstetrics Committee

## Fogsi Good Clinical Practice Recommendations

<b>Committee Chair-Convenor</b>	: Mitra Saxena
<b>ICOG Co-Author-Co-Convenor</b>	: Abha Rani Sinha
<b>Mentors</b>	: Hrishikesh D Pai, Madhuri Patel, Laxmi Shrikhande
<b>Advisors</b>	: Sanjay Gupte, Hema Divakar
<b>National Coordinators</b>	: CN Purandare, Rishma Dhillon Pai, Nandita Palshetkar, Jaydeep Tank
<b>Coordinator</b>	: Surekha Tayade
<b>Contributors</b>	: Mitra Saxena, Abha Rani Sinha, Manju Puri, Renu Yadav, Archana Kumari, Bhawana Tiwari, Sweta Singh

## Experts

Sanjay Gupte

Shyam Desai

Bhaskar Pal

Jayam Kanan

Charmila Aiyoo

Haresh Doshi

Girija Wagh

Krishnendu Gupta

Vatsala Dadwal

Shashilata Kabra

Nivedita Jha

Pooja Sikka

*Disclaimer:* These recommendations for “Birth after Cesarean Section” have been developed, to be of assistance to obstetricians, gynecologists, consulting physicians, and general practitioners by providing guidance and recommendations for managing women who have had a cesarean section and are going to give birth again. The recommendations included here should not be viewed as being exclusive to other concepts or as covering all legitimate strategies. The suggestions made here are not meant to dictate how a particular patient should be treated because they neither set a standard of care nor do they guarantee a particular result. To evaluate patients, counsel about birthing options, and provide the best care possible while also taking the necessary safety precautions, clinicians must rely on their own experience and knowledge. The writers or contributors disclaim all responsibility for any harm and/or damage to people or property resulting from the use or operation of any techniques, goods, guidelines, or ideas presented in this content.

*Intent:* The guidelines are a reference of recommended care and are not an endpoint of clinical care. The guidelines are subject to evolution with advances in scientific knowledge and technology.

## TARGETED AUDIENCE

Obstetricians, gynecologists, midwives, nurses, general practitioners, and other health personnel in charge of the care of women deliver after previous cesarean section.

## INTRODUCTION

The rise in the incidence of cesarean delivery has been alarming worldwide, including India. According to the National Family Health Survey (NFHS) 5, cesarean section rates have increased from 8.5% in 2005–2006 to 21.5% in 2019–2021.<sup>1</sup> World Health Organization (WHO) recommends a cesarean section rate of 10–15% for optimal maternal and neonatal outcomes.<sup>2</sup> Studies from India have shown that various demographic parameters, like advanced maternal age, higher socioeconomic status, literacy, access to a better health facility, private sector, and southern geographical distribution, play a role in the rising rates of cesarean sections in India.<sup>3,4</sup> The rate of primary cesarean sections is rising due to newer indications such as IVF pregnancy, older maternal age, cesarean on maternal request, and fear of litigation. This translates into an increase in incidence of repeat cesarean sections in subsequent pregnancies contributing to the financial burden on the nation's economy and increased maternal and neonatal morbidity.

So, there is an urgent need to optimize cesarean section rates, both by decreasing the rate of primary cesarean section and encouraging mothers with previous cesarean section for trial of labor after cesarean (TOLAC) section. Each patient needs to be individualized for TOLAC or elective repeat cesarean section (ERCS) on a case-to-case, basis balancing the risks and benefits.

## PURPOSE AND SCOPE

The purpose of this document is to review the available evidence as regards the optimum mode of childbirth TOLAC or ERCS following previous cesarean section to guide the mothers and practicing obstetric care providers managing these mothers. It will also throw light on the ideal setup and prerequisites for TOLAC, especially in the context of low- and middle-income countries.

## METHODOLOGY

These good clinical practice recommendations (GCPR), given by the Federation of Obstetric and Gynaecological Societies of India (FOGSI), followed the process mentioned in RCOG “Guideline for guideline development - 2020”. The topic was selected and approved, and a task force was formulated. The core group was identified, and the time lines were discussed and communicated. The scope of the guideline was drafted, objectives were framed, and the stakeholders were listed and incorporated into the scope. A systematic review of the literature was conducted to provide the best possible evidence base for the GCPR. Existing guidelines, meta-analyses, systematic reviews, and key articles relating to blood transfusion were reviewed by the core group, and recommendations relevant to the Indian scenario were framed. These recommendations review the available evidences in the field by the members of the task force that include eminent obstetricians, gynecologists, and transfusion specialists of repute. The guideline was peer reviewed by experts, multiple times, and feedback was incorporated. No conflict of interest or good standing was appropriately expressed by all concerned for professional personal or nonpersonal interest, either financial or nonfinancial. The committee evaluated



## 4 Good Clinical Practice Recommendations

recommendations and evidence using the methodology of the United States Preventive Service Task Force (USPSTF), on the basis of the strength of evidence and magnitude of net benefit (benefits minus harms).

*Levels of Evidence:*

Level of Evidence	Recommendation	Description
Level 1	Strongly recommended	Data derived from multiple randomized trials or meta-analyses
Level 2	Suggested	Data derived from a single randomized trials or large nonrandomized trial
Level 3	Unresolved	Consensus of opinion of experts or small studies, retrospective studies, or registries
Grade A	Strongly recommended	Well-conducted RCT with 100 or more patients, including meta-analysis
Grade B	Recommended	Poorly controlled RCT, well-conducted case control, or observational study
Grade C	Suggested	Expert opinion
GPP	Clinical Practice Points	Evidence was not sought. A practice point has been made by the guideline development group where important issues arose from the discussion of evidence-based or clinical consensus recommendations

## TERMINOLOGIES

Bishops Score	A score used to determine how favorable the cervix is for induction of labor. A vaginal examination is performed with a score given to several features of the cervix and station of the presenting part. These are added together to provide a Bishop score
Primary Cesarean Section	A woman's first cesarean section birth
Trial of Labor after Cesarean (TOLAC)	Giving a trial of labor to a woman who has had a previous cesarean section with the intent of vaginal birth as the preferred mode of delivery. TOLAC may result in a VBAC or Emergency CS. Planned VBAC is also used as a terminology for TOLAC
Vaginal Birth after Cesarean Section (VBAC)	When birth occurs vaginally after one or more previous cesarean sections, it is called Vaginal Birth After Cesarean (VBAC). It is an outcome of TOLAC
VBAC Rate	VBAC rate is the proportion of TOLAC resulting in vaginal birth
Elective Repeat Cesarean Section (ERCS)	Planned repeat Cesarean section in a woman who had a previous cesarean section (CS)
Emergency CS (EmCS)	When TOLAC fails or is abandoned due to some indication, an emergency CS is performed
Uterine Rupture	Disruption of the uterine muscle extending to and involving the uterine serosa
Uterine Dehiscence	Disruption of the uterine muscle, with intact uterine serosa
Inter-pregnancy Interval	Time between last childbirth and present conception (LMP)
Inter-delivery Interval	Time-period between two childbirths

## EXECUTIVE SUMMARY OF RECOMMENDATIONS

Birth after previous cesarean section merits careful evaluation, detailed discussion, and shared decision-making to accomplish subsequent delivery by the safest route. Both TOLAC and ERCS are safe and feasible options for properly selected patients after careful evaluation and documentation (GPP).

## TOLAC

### Patient Selection

Recommendations:

- Planned TOLAC may be offered to women with a singleton pregnancy with cephalic presentation at term and a single previous lower segment cesarean section, with or without a history of previous vaginal birth (Grade B).
- TOLAC is contraindicated in women with previous upper segment classical CS, complex cesarean scars (inverted T-shaped or J-shaped scars), previous history of rupture uterus, history of myomectomy with entry into the uterine cavity and in the presence of any other contraindication to vaginal birth such as placenta previa, repaired VVF, cephalopelvic disproportion, etc. (Grade C).

- Inter-pregnancy interval (interval between last childbirth and next pregnancy) of  $\geq 18$  months is ideal for mothers planning TOLAC (Grade C).
- Inter-pregnancy interval of  $< 6$  months is associated with a higher risk of scar dehiscence but is not a contraindication for TOLAC, especially if the mother goes in spontaneous labor (GPP).
- In mothers with previous two cesarean sections presenting in active or advanced labor, TOLAC may be offered after detailed counseling (GPP).
- When deciding on mode of delivery, the factors affecting the success of VBAC must be carefully considered (Grade B).

#### Discussion:

The type and number of cesarean deliveries are overriding factors in considering mothers for TOLAC. Number of prior cesareans: One prior transverse uterine incision has a success rate for vaginal birth of 72–75% and uterine scar rupture around 0.5%.<sup>6</sup> Studies have shown a comparatively higher risk of rupture in women with two or more cesarean births.<sup>7-12</sup>

#### Prior Incision Type:<sup>28</sup>

Prior Incision	Estimated Scar Rupture Rate (%)
Classical	2–9
T shaped	4–9
Low vertical	1–7
One low transverse	0.2–0.9
Multiple low transverse	0.9–1.8
Prior preterm cesarean delivery	Increased
Prior lower segment uterine rupture	2–6
Prior rupture in upper uterus	9–32

*Inter-pregnancy interval:* Available evidence indicates that birth spacing is an independent risk factor for uterine rupture, placenta previa, abnormal placentation, and preterm birth.<sup>12,13</sup> Inter-delivery interval  $\leq 18$  months is associated with threefold greater risk of rupture during subsequent TOLAC compared with interval  $> 18$  months. A short inter-pregnancy interval is not a contraindication for VBAC. Inter-pregnancy interval has not been shown to affect VBAC rates in mothers with spontaneous labor.<sup>14,15</sup>

*Factors affecting success of TOLAC:*<sup>16-19</sup> Factors favoring VBAC include previous vaginal birth, especially previous VBAC, previous CS done for breech or fetal distress, spontaneous onset of labor, favorable Bishop's score, and uncomplicated low-risk pregnancy. Previously successful VBAC is the strongest predictor of successful TOLAC (85–90%).<sup>20</sup>

Unfavorable factors for VBAC include no prior vaginal birth, previous CS for dystocia, or failure to progress, failed induction or cephalopelvic disproportion, induction of labor (IOL), pregnancies complicated by obesity, advanced maternal age, hypertensive disorders of pregnancy, diabetes mellitus (both gestational and pregestational), and fetal macrosomia of 4 kg or more in current pregnancy.<sup>20-23</sup>

Clinicians should be aware that there is uncertainty about the safety and efficacy of TOLAC in pregnancies complicated by post-dates, twin gestation, antepartum stillbirth, or maternal age of 40 years or more.<sup>22</sup> Hence, a cautious approach is advised if TOLAC is being considered in such circumstances.

Twin pregnancy or preterm delivery is not a contraindication for TOLAC but should be individualized carefully. Women who are preterm and considering the options for birth after a previous cesarean delivery should be informed that planned preterm TOLAC has similar success rates to planned term VBAC but with a lower risk of uterine rupture.<sup>24</sup> Breech presentation is not a contraindication but less likely to result in successful TOLAC.

VBAC score (Annexure 6.3) has been used by some authors to predict the success of women attempting TOLAC. It is based on five features: admission Bishop score, age, indication of previous cesarean delivery, body mass index (BMI), and previous vaginal birth. The higher the VBAC score, the higher the success rate of TOLAC.<sup>23</sup>

### Antenatal Counseling and Consent

#### Recommendations:

- All mothers with previous cesarean section must be counseled in the antenatal period on the risks and benefits of both VBAC and ERCS after review of previous records and assessment of integrity of scar (GPP).

- A patient information leaflet must be provided routinely to the mothers during counseling session (GPP).
- VBAC checklist must be used during counseling for a shared decision-making and informed consent (Grade B).
- A final decision on the mode of birth should be agreed upon by the mother and treating obstetrician, before the expected/planned date of delivery (GPP).
- Mothers should be informed that success rate of planned VBAC is 72–75% (Grade C).
- They should also be informed that the risk of uterine rupture following a planned VBAC with previous one LSCS is approximately 1 in 200 (0.5%) (Grade B).
- Women should be informed that the absolute risk of VBAC-related perinatal death is comparable to the risk for nulliparous women delivering vaginally (Grade C).
- Women should be informed that ERCS is associated with slightly increased risk of intra-abdominal and pelvic adhesions, placenta previa/accreta spectrum, Cesarean scar pregnancy in future pregnancies (Grade C).
- The risk of perinatal death with ERCS is very low, but in ERCS performed before 39+0 weeks of gestation there is a small increase in risk of neonatal respiratory morbidity (Grade C).
- Women should be informed that highest chance of adverse outcomes occurs when TOLAC ends in emergency cesarean (Grade B).

*Discussion:* An initial round of discussion about the mode of delivery can be initiated at the registration visit after review of previous records and assessing the integrity of scar, and then finalized by 36+0 weeks.

*Benefits and Risks of TOLAC:*

*Maternal benefits:* Vaginal birth after CS has shorter hospital stay,<sup>6,25,26</sup> faster recovery,<sup>6,27</sup> avoidance of major surgery and related complications,<sup>27</sup> and multiple CS in future<sup>16</sup> with resultant complications. It increases the likelihood of future vaginal birth,<sup>6</sup> and sense of satisfaction, empowerment in those desiring more vaginal births.<sup>16,17</sup> Risk of maternal mortality is reduced compared with ERCS (0.004% versus 0.013%).<sup>25-27</sup>

*Maternal risks:* There is a 25–28% chance of emergency CS in women undergoing trial of labor TOLAC.<sup>6</sup> Emergency CS is associated with higher morbidity compared to ERCS. The risk of uterine rupture is 0.5% that may be associated with significant maternal and perinatal morbidity. Estimated incidence varies across studies.<sup>15</sup> The risk increases with induction and augmentation of labor. There is potential trauma to perineum and pelvic floor following vaginal birth.<sup>6,16,28,19</sup> Risk of anal sphincter injury is increased in women having second birth following previous one CS compared with nulliparous women.<sup>28</sup>

*Neonatal benefits:* There is an increased likelihood of early initiation of breastfeeding at birth, exclusive breastfeeding at discharge and at 6–8 weeks postpartum.<sup>16,17,20</sup>

*Neonatal risks:* There is an increased risk of perinatal mortality compared with ERCS (13 per 10,000, 0.13% versus 0.05% 5 per 10,000).<sup>5</sup> The prospective risk of antepartum stillbirth while awaiting spontaneous labor beyond 39+0 weeks (recommended timing for ERCS) is 0.1% (1 in 1000).<sup>6,31</sup> There is increased risk of hypoxic-ischemic encephalopathy (HIE) and associated long-term sequelae compared with ERCS (0.08% 8 in 10,000 versus less than 0.01% 1 in 10,000).<sup>17</sup>

*Benefits and Risks of ERCS:*

*Maternal benefits:* There is a low risk of uterine rupture. Less than 0.03%.<sup>5,6</sup> There is convenience of a planned procedure.<sup>6</sup> The risk of emergency cesarean section and related complications is less. Lower prevalence of urinary incontinence and pelvic organ prolapse in women who deliver only by CS.<sup>32</sup> Sterilization can be offered in the same sitting if fertility is no longer desired.

*Maternal risks:* Potential risk in conceiving in future.<sup>33</sup> More likely to have cesarean birth in future pregnancy. There is an increase in risk of Placenta Accreta Syndrome (PAS) and related maternal morbidity and mortality with increasing number of previous cesarean sections.<sup>34</sup> Increased risk of maternal mortality compared with VBAC 0.013% (13 in 100,000) versus 0.004% (4 in 100,000).<sup>4,6,25</sup>

*Fetal and neonatal benefits:* There is reduced risk of Hypoxic Ischemic Encephalopathy (HIE) compared with planned VBAC (less than 0.01% (1 in 10,000) births compared with 0.08% (8 in 10,000) births).<sup>6,35</sup> The rate of perinatal mortality is lower compared to planned VBAC (0.05%, 5 in 10,000 births versus 0.13% 13 in 10,000 births).<sup>25</sup>

*Neonatal risks:* The rate of early initiation of breastfeeding at birth is lower.<sup>30,36</sup>

The conclusion of discussion should be interpreted with caution, and the uncertainties should be discussed with women.<sup>37-39</sup>

### **Timing of TOLAC**

Recommendation:

- Previous lower segment cesarean section (transverse uterine incision) with single, term, cephalic presentation, and adequate pelvis with no other high-risk factor, it is safe to wait till 40 weeks for spontaneous onset of labor as in other pregnant women without previous CS (Grade B).

Previous low-transverse uterine incision with single, term, cephalic presentation, and adequate pelvis with no other high-risk features, trial of labor can be taken up to 39 to 39 weeks and 6 days.<sup>6</sup> Imaging for measuring scar thickness to predict the risk of scar rupture is not indicated.<sup>40</sup>

### **Setting for TOLAC**

Recommendations:

- Previous CS is a high-risk pregnancy and should be booked in a facility fully equipped with continuous fetal and maternal monitoring and facility for emergency cesarean section and quick emergency response (Grade B).
- Immediate availability of senior obstetrician, anesthetist, and a neonatologist/pediatrician irrespective of mode of delivery (GPP).
- One-on-one monitoring (Parturient/Midwife) is desirable (GPP).

Women should be advised that planned VBAC should be conducted in adequately staffed and equipped facility with continuous intrapartum care and monitoring. There must be an in-house facility of immediate cesarean section (within 30 minutes), blood transfusion, and advanced neonatal resuscitation.

### **Intrapartum Management of Planned VBAC**

Recommendations:

- Women undergoing trial of labor should preferably have continuous electronic fetal heart rate monitoring beginning at the onset of regular uterine contractions (Grade C).
- Abnormal CTG, usually in the form of prolonged deceleration, is the most consistent finding with uterine rupture and is usually present in up to 75–80% cases (Grade C).
- Features suggestive of scar dehiscence or rupture are abnormal CTG, severe abdominal pain persisting in between contractions, maternal tachycardia, acute onset scar tenderness, vaginal bleeding, hematuria, cessation of uterine contractions, loss of uterine contour, loss of station of presenting part on prevaginal findings, hypotension, and fainting (GPP).
- Epidural analgesia is not contraindicated in TOLAC, although we need to be cautious if patient's analgesic requirement increases during labor, keeping in mind uterine rupture (Grade C).
- Judicious use of episiotomy and instrumental delivery is advisable when indicated (Grade C).
- Routine exploration of scar is not recommended (Grade B).
- AMTSL is recommended in all cases (Grade B).

*Discussion:* There should be careful and continuous monitoring of the labor to ensure prompt identification of maternal or fetal compromise, labor dystocia, or uterine scar rupture. All women for TOLAC should receive supportive one-to-one care, intravenous access with full blood count and blood grouping and cross matching, continuous electronic fetal monitoring where available, and regular monitoring of mother for symptoms and signs of scar dehiscence. Regular (4-hourly) assessment for progress of labor as per partogram once the mother is in active labor. Hypotonic contractions or cessation of contractions should be an indicator of a poor prognostic factor for successful VBAC.

Classic triad of complete uterine rupture (suprapubic pain, vaginal bleeding, and fetal heart rate abnormalities) may present in less than 10% of cases.<sup>41</sup> Other nonspecific signs and symptoms include: maternal tachycardia, lower abdominal pain in between contractions, scar tenderness, abnormal CTG, prolonged first or second stage of labor, hematuria, cessation

of uterine contractions, abdominal palpation of fetal parts superficially, loss of station of the presenting part, chest pain or shoulder tip pain, hypotension, or shock.<sup>6,42,43</sup>

Women with an unplanned labor and a history of previous cesarean delivery should have a discussion and be managed by an experienced obstetrician to determine feasibility of VBAC.<sup>6</sup> Epidural analgesia is not contraindicated in TOLAC, although an increasing requirement for pain relief in labor should raise awareness of the possibility of an impending uterine rupture.

Women should be offered continuous electronic fetal monitoring for the duration of TOLAC, commencing at the onset of regular uterine contractions. Abnormal fetal heart rate is the most consistent finding in uterine rupture.

### Induction of Labor

Recommendations:

- Women should be informed of the two- to threefold increased risk of uterine rupture and around 1.5-fold increased risk of cesarean delivery in induced and/or augmented labor compared with spontaneous onset of labor (Grade C).
- Clinicians should be aware that the mechanical methods of cervical ripening are safer compared to use of prostaglandins with regards to risk of scar dehiscence or scar rupture (Grade C).

*Discussion:* Spontaneous labor with good Bishop's score has more chances of successful TOLAC and VBAC rate. IOL at term with mechanical method (Foleys catheter) and augmentation with amniotomy shows good success rate, but induction with prostaglandin analogue or oxytocin increases the risk of rupture by 1.5-fold.<sup>44</sup> There is insufficient evidence for the preferred method of IOL in a mother with previous cesarean delivery.<sup>45</sup>

Labor induction is associated with a higher failure rate during TOLAC. It can lead to an increased risk of emergency cesarean birth and uterine rupture. Uterine rupture is more common in women induced with oxytocin alone 1.1% than those in spontaneous labor 0.4%. Oxytocin dose above 20 mU/min increases the risk of uterine rupture fourfold or more hence they should be avoided in TOLAC.<sup>44</sup>

For ripening of cervix, Misoprostol is contraindicated due to high risk of rupture. Evidence on the use of dinoprostone is not clear.<sup>46,47</sup> Risk of scar rupture with the use of mechanical methods like transcervical Foley catheter (1.6%) is not significantly greater than with spontaneous labor (1.1%) or with using Amniotomy with or without oxytocin (1.2%).<sup>22,44,45</sup>

In mothers with an intrauterine fetal death, labor can be induced with oral mifepristone 200 mg every 8 hours for six doses or 600 mg two doses 24 hours apart.

### Postpartum Care

Recommendations:

- Provide standard postnatal care, including appropriate contraceptive advice, according to the mode of birth and clinical circumstances (GPP).
- Offer women the opportunity to discuss their birth experience and the implications for future pregnancies. Consider and assess emotional and psychological well-being and facilitate support to prevent and address post-traumatic stress disorder wherever indicated (GPP).

### Emergency Cesarean Section

Recommendation:

- Women should be made aware that the greatest risk of adverse outcome occurs in a trial of labor after CS failing and resulting in emergency cesarean delivery (Grade B).

*Discussion:* The decision to perform an emergency cesarean in women undergoing TOLAC is recommended for any threat to fetal or maternal well-being and unsatisfactory progress of labor. Once a decision has been taken for cesarean birth, the urgency of cesarean section should be decided based on the condition of the mother and her unborn baby. Undue haste to achieve a short decision delivery interval (DDI) has its own surgical and anesthetic risks, with the potential for maternal and neonatal harm. A target DDI for cesarean section is an audit tool that allows testing the efficiency of the whole delivery team and has become an accepted practice. As per the RCOG guidelines,<sup>6,25</sup> the urgency of cesarean section has been classified as follows:<sup>6,25</sup>

- Category 1: Immediate threat to the life of the woman or fetus (e.g., suspected uterine rupture, major placental abruption, cord prolapse, fetal hypoxia, or persistent fetal bradycardia). Decision delivery time is 30 minutes.

- Category 2: Maternal or fetal compromise which is not immediately life-threatening. Decision delivery time is 75 minutes.
- Category 3: No maternal or fetal compromise but needs early birth; the decision delivery time is 24 hours.
- Category 4: Birth timed to suit woman or healthcare provider.

#### *Disadvantages of Emergency Cesarean:*

*Maternal:* Emergency CS has higher postoperative pain score, febrile morbidity, rate of surgical site infection 5.2% versus 2.6%, rate of postpartum hemorrhage (twofold increase), and admission to intensive care unit ICU compared to elective CS.<sup>2,25,48</sup> The rates of various complications, apart from postoperative pain and infection mentioned above, are marginally increased over elective cesareans; the difference has not been found to be statistically significant.<sup>49</sup>

*Neonatal:* Emergency CS is associated with increased NICU admissions, poor APGAR scores at 1 minute and 5 minutes, higher incidence of transient tachypnea in newborn, respiratory distress syndrome, and birth asphyxia 4.04% versus 2.11% compared to elective CS.<sup>50</sup>

## Elective Repeat Cesarean Section (ERCS)

#### Recommendations:

- ERCS is advised in women with previous uterine rupture, previous classical cesarean section, and previous complicated scars (Inverted T, J shaped) (Level A).
- ERCS is recommended in previous two or more cesarean sections, in low resource settings (GPP).
- ERCS is recommended in cases of previous myomectomy where the cavity was opened or where operative details are not available (GPP).
- ERCS delivery should be planned after 39+0 weeks of gestation (Level A).
- Prophylactic antibiotic prophylaxis should be administered 15–60 minutes before the skin incision in women undergoing ERCS (Level B).
- When there are associated medical and obstetrical indications, timing of cesarean must be individualized based on risks and benefits to the mother and the fetus (GPP).

*Discussion:* Indications for ERCS are the same as contraindications for TOLAC, as described under patient selection at 5.1. The optimum timing for planning an ERCS is given in **Table 1**. ERCS should be planned at 39+0 weeks unless indicated earlier for some other coexistent conditions like hypertensive disorder of pregnancy, placenta previa, and gestational diabetes. This is to minimize the risk of respiratory morbidity associated with ERCS.<sup>51</sup>

**Table 1** Timing for elective repeat CS

Previous one lower segment cesarean section	39 + 0 weeks
Multiple previous low transverse uterine incision	38+0 to 38 + 6 weeks
Previous low-vertical uterine incision	37+0 to 37 + 6 weeks
Previous classical uterine incision	36+0 to 37+0 weeks
Previous uterine rupture	34+0 to 35+0 weeks

## Communication and Counseling

#### Recommendation:

- Counseling of the patient and attendants must be done, explaining the risks and benefits, while the consent is taken. They must be kept informed of the course of labor in mothers opting for TOLAC (GPP).  
The key to success of any system is teamwork, and good communication is central to this. This ensures timely and safe delivery of fetus without any undue risk to mother. All the team members of the multidisciplinary team must be given proper information regarding the urgency of the cesarean section along with indication and additional risk factors, if any. Counseling of the patient and attendants must be done in an appropriate manner, and risks and benefits must be discussed while the consent is taken.



### Record Keeping

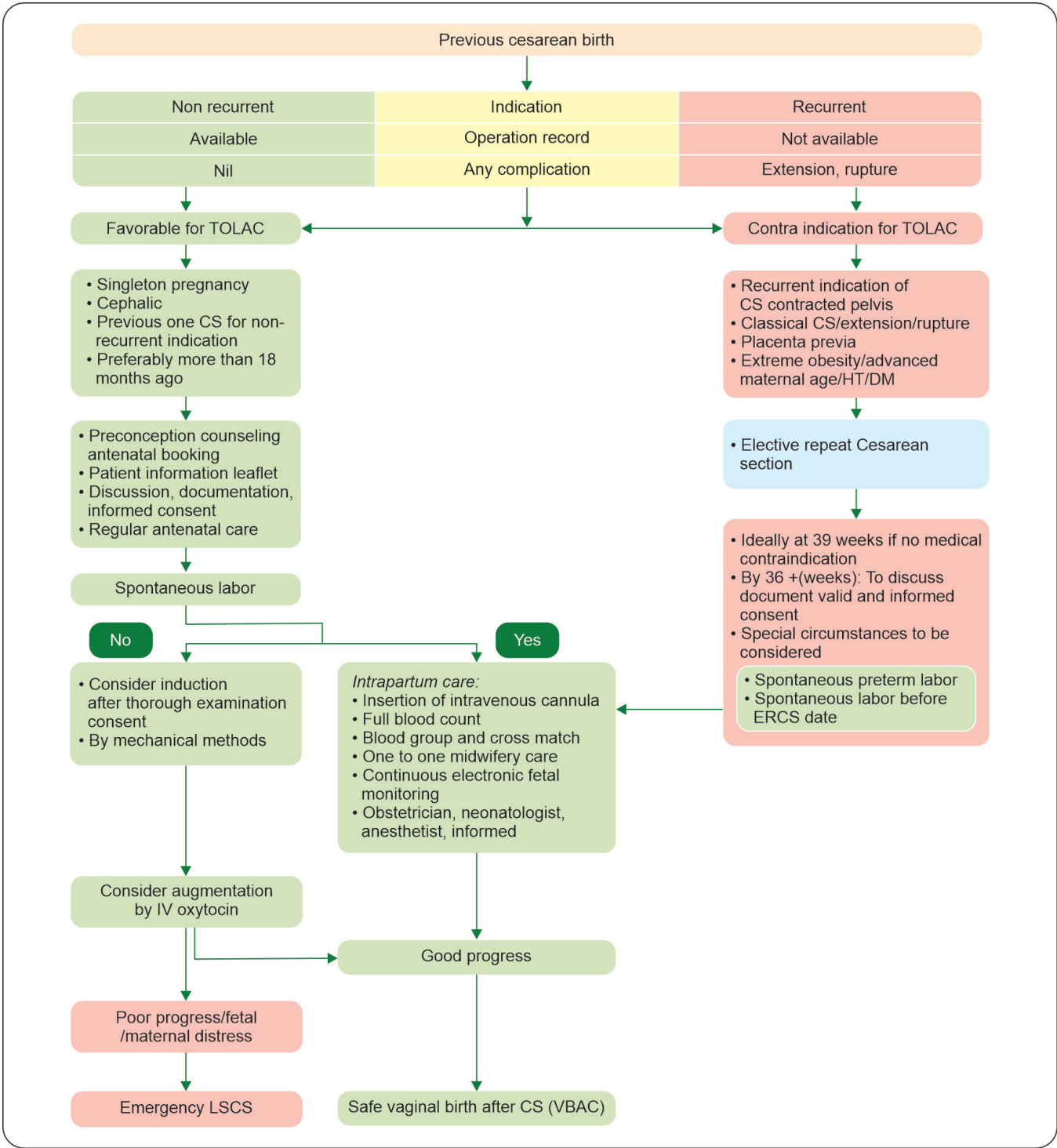
Recommendation:

- The justification and classification of each cesarean section and VBAC must be clearly documented in the Labor and Delivery Record by the senior obstetrician undertaking the cesarean section (GPP).

After cesarean section, every woman should be debriefed about the indication of CS and should be provided with appropriate operation notes mentioning the indication, type of uterine incision, any extensions, method of suturing the uterine incision, single or two layers, postoperative period, and whether she is eligible for a possibility of TOLAC next time. This will help the patient understand and decide the mode of delivery in consultation with the treating obstetrician in subsequent pregnancy.

# ANNEXURES

## ANNEXURES-1 (FLOWCHART)



**ANNEXURES-2 (FLOWCHART)**

**Patient Information Leaflet**

The information here aims to help you better understand your pregnancy and your options for planning the birth of your baby. When considering the benefits and risks of your different options, it is important to bear in mind that we must rely on studies of variable quality, including some that compare planned cesarean births for all reasons with vaginal births, or emergency cesarean births with vaginal births.

*Vaginal Birth After Cesarean (VBAC):*

<p><i>Benefits:</i></p> <p><i>Maternal:</i></p> <ul style="list-style-type: none"> <li>• Shorter hospital stay</li> <li>• Faster recovery</li> <li>• Less postoperative pain</li> <li>• Less chances of wound infection</li> <li>• Avoidance of major surgery</li> <li>• Increased likelihood of future vaginal birth</li> <li>• Sense of satisfaction</li> <li>• Increased likelihood of breastfeeding</li> </ul> <p><i>Neonatal:</i></p> <ul style="list-style-type: none"> <li>• Increased breastfeeding rate</li> </ul>	<p><i>Risks:</i></p> <p><i>Maternal:</i></p> <ul style="list-style-type: none"> <li>• 25–28% chance of emergency cesarean with increased morbidity as compared to Elective cesarean</li> <li>• Uterine rupture risk (0.5%)</li> <li>• Potential risk of trauma to perineum and pelvic floor</li> <li>• Increased risk of instrumental delivery</li> </ul> <p><i>Neonatal:</i></p> <ul style="list-style-type: none"> <li>• Increased risk of HIE as compared to elective repeat cesarean</li> <li>• Increased risk of perinatal mortality when compared with elective cesarean</li> </ul>
---	---

*Elective Repeat Cesarean:*

<p><i>Benefits:</i></p> <p><i>Maternal:</i></p> <ul style="list-style-type: none"> <li>• Extremely low risk of uterine rupture</li> <li>• Urinary incontinence and pelvic organ prolapse is much lower</li> <li>• If further fertility is not desired sterilization in same sitting can be opted for</li> </ul> <p><i>Neonatal:</i></p> <ul style="list-style-type: none"> <li>• Reduced risk of HIE as compared to planned VBAC</li> <li>• Less risk of perinatal mortality</li> </ul>	<p><i>Risks:</i></p> <p><i>Maternal:</i></p> <ul style="list-style-type: none"> <li>• Increased risk of cesarean in future pregnancies</li> <li>• Increased risk of morbidities</li> <li>• Hemorrhage</li> <li>• Increased postoperative pain</li> <li>• Increased chance of placenta accreta (morbidly adherent placenta)</li> <li>• Injury to bowel and bladder</li> <li>• Longer hospital stay</li> <li>• Longer time for recovery</li> <li>• Decreased risk of breastfeeding</li> </ul> <p><i>Neonatal:</i></p> <ul style="list-style-type: none"> <li>• Decreased rate of breastfeeding</li> </ul>
---	---

With the above-mentioned risks and benefits of VBAC versus Elective repeat cesarean, you are free to make your choice and give consent accordingly.

I hereby declare and confirm that the information given above is accurate and true to the best of my knowledge and belief, and that the requisite information is required for the purpose stated above. I also declare that I have been given detailed information regarding the procedures and associated risks and benefits of the same and have understood them. I am making the decision about the mode of delivery based on my understanding and am willing to take full responsibility and liability for this decision.

Patient’s signature

Witness

**VBAC Check List**

## REFERENCES

1. International Institute for Population Sciences (IIPS). National Family Health Survey (NFHS-5), 2019-21: India. National Family Health Survey, India. 2021. Available from: <http://rchiips.org/nfhs/>
2. Betrán AP, Torloni MR, Zhang JJ, et al. WHO statement on caesarean section rates. *Bjog*. 2016;123(5):667.
3. Pandey AK, Raushan MR, Gautam D, et al. Alarming trends of caesarean section—time to rethink: evidence from a large-scale cross-sectional sample survey in India. *J Med Internet Res*. 2023;25:e41892.
4. Roy N, Mishra PK, Mishra VK, et al. Changing scenario of C-section delivery in India: understanding the maternal health concern and its associated predictors. *J Fam Med Prim Care*. 2021;10(11):4182.
5. Guise JM, Eden K, Emeis C, et al. Vaginal birth after cesarean: new insights. Evidence Report Technology Assessment (Full Report). 2010(191):1–397.
6. Rortveit G, Hannestad YS. Association between mode of delivery and pelvic floor dysfunction. *Tidsskr Nor Legeforen*. 2014;134(19):1848–52.
7. Macones GA, Cahill A, Pare E, et al. Obstetric outcomes in women with two prior cesarean deliveries: is vaginal birth after cesarean delivery a viable option? *Am J Obstet Gynecol*. 2005;192:1223–8; discussion 1228–9.
8. Miller DA, Diaz FG, Paul RH. Vaginal birth after cesarean: a 10-year experience. *Obstet Gynecol*. 1994;84:255–8.
9. Caughey AB, Shipp TD, Repke JT, et al. Rate of uterine rupture during a trial of labor in women with one or two prior cesarean deliveries. *Am J Obstet Gynecol*. 1999;181:872–6.
10. Spaans WA, van der Vliet LM, Röell-Schorer EA, et al. Trial of labour after two or three previous caesarean sections. *Eur J Obstet Gynecol Reprod Biol*. 2003;110:16–9.
11. 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.
12. Ye L, Cao W, Yao J, et al. Systematic review of the effects of birth spacing after cesarean delivery on maternal and perinatal outcomes. *Int J Gynecol Obstet*. 2019;147(1):19–28.
13. Kessous R, Sheiner E. Is there an association between short interval from previous cesarean section and adverse obstetric and perinatal outcome? *J Matern Fetal Neonatal Med*. 2013;26(10):1003–6.
14. Fitzpatrick KE, Kurinczuk JJ, Alfirevic Z, et al. Uterine rupture by intended mode of delivery in the UK: a national case-control study. *PLoS Medicine*. 2012;9(3):e1001184.
15. Huang WH, Nakashima DK, Rumney PJ, et al. Interdelivery interval and the success of vaginal birth after cesarean delivery. *Obstet Gynecol*. 2002;99(1):41–4.
16. Regan J, Thompson A, DeFranco E. The influence of mode of delivery on breastfeeding initiation in women with a prior cesarean delivery: a population-based study. *Breastfeed Med*. 2013;8:181–6.
17. Chen C, Yan Y, Gao X, et al. Influences of cesarean delivery on breastfeeding practices and duration: a prospective cohort study. *J Hum Lact*. 2018;34(3):526–34.
18. Sentilhes L, Vayssièrè C, Beucher G, et al. Delivery for women with a previous cesarean: guidelines for clinical practice from the French College of Gynecologists and Obstetricians (CNGOF). *Eur J Obstet Gynecol Reprod Biol*. 2013;170(1):25–32.
19. Wu Y, Kataria Y, Wang Z, et al. Factors associated with successful vaginal birth after a cesarean section: a systematic review and meta-analysis. *BMC Pregnancy and Childbirth*. 2019;19(1):360.
20. Jastrow N, Roberge S, Gauthier RJ, et al. Effect of birth weight on adverse obstetric outcomes in vaginal birth after cesarean delivery. *Obstet Gynecol*. 2010;115:338–43.
21. Srinivas SK, Stamilio DM, Stevens EJ, et al. Predicting failure of a vaginal birth attempt after cesarean delivery. *Obstet Gynecol*. 2007;109:800–5.
22. Grobman WA, Lai Y, Landon MB, et al.; National Institute of Child Health and Human Development (NICHD) Maternal-Fetal Medicine Units Network (MFMU). Development of a nomogram for prediction of vaginal birth after cesarean delivery. *Obstet Gynecol*. 2007;109:806–12.
23. Metz TD, Stoddard GJ, Henry E, et al. Simple, validated vaginal birth after cesarean delivery prediction model for use at the time of admission. *Obstet Gynecol*. 2013;122:571–8.
24. Landon MB, Leindecker S, Spong CY, et al.; National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. The MFMU Cesarean Registry: factors affecting the success of trial of labor after previous cesarean delivery. *Am J Obstet Gynecol*. 2005;193:1016–23.
25. American College of Obstetricians. ACOG Practice Bulletin No. 205: Vaginal birth after cesarean delivery. *Obstet Gynecol*. 2019;133(2):e110–e27.
26. The Royal Australian and New Zealand College of Obstetricians and Gynaecologists. Birth after previous caesarean section. College Statement C-Obs 38. [Internet]. 2019 [cited 2019 Dec 10]. Available from: <http://www.ranzcog.edu.au>
27. Lundgren I, Begley C, Gross MM, et al. 'Groping through the fog': a metasynthesis of women's experiences on VBAC (vaginal birth after caesarean section). *BMC Pregnancy Childbirth*. 2012;12:85.

28. Manresa M, Pereda A, Bataller E, et al. Incidence of perineal pain and dyspareunia following spontaneous vaginal birth: a systematic review and meta-analysis. *Int Urogynecol J*. 2019;30(6):853–68.
29. Elvander C, Ahlberg M, Edqvist M, et al. Severe perineal trauma among women undergoing vaginal birth after cesarean delivery: a population-based cohort study. *Birth*. 2019;46(2):379–86.
30. Zanardo V, Savona V, Cavallin F, et al. Impaired lactation performance following elective delivery at term: role of maternal levels of cortisol and prolactin. *J Matern Fetal Neonatal Med*. 2012;25(9):1595–8.
31. Smith GC, Pell JP, Dobbie R. Cesarean section and risk of unexplained stillbirth in subsequent pregnancy. *The Lancet*. 2003;362(9398):1779–84.
32. Rortveit G, Hannestad YS. Association between mode of delivery and pelvic floor dysfunction. *Tidsskrift for Den Norske Legeforening*. 2014;134(19):1848–52.
33. Dodd JM, Crowther CA, Huertas E, et al. Planned elective repeat caesarean section versus planned vaginal birth for women with a previous caesarean birth. *Cochrane Database of Syst Rev*. [Internet]. 2013 [cited 2019 Dec 10]; Issue 12. Art No.: CD004224 DOI:10.1002/14651858.CD004224.pub3
34. Klar M, Michels KB. Cesarean section and placental disorders in subsequent pregnancies—a meta-analysis. *J Perinat Med*. 2014;42:571–83.
35. Landon MB, Hauth JC, Leveno KJ, et al. Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *N Engl J Med*. 2004;351(25):2581–9.
36. Prior E, Santhakumaran S, Gale C, et al. Breastfeeding after cesarean delivery: a systematic review and meta-analysis of world literature. *Am J Clin Nutr*. 2012;95(5):1113–35.
37. Dodd JM, Crowther CA, Grivell RM, et al. Elective repeat caesarean section versus induction of labour for women with a previous caesarean birth. *Cochrane Database Syst Rev*. 2014;(12):CD004906.
38. Dodd JM, Crowther CA, Huertas E, et al. Planned elective repeat caesarean section versus planned vaginal birth for women with a previous caesarean birth. *Cochrane Database Syst Rev*. 2013;(12):CD004224.
39. Horey D, Kealy M, Davey MA, et al. Interventions for supporting pregnant women's decision-making about mode of birth after a caesarean. *Cochrane Database Syst Rev*. 2013;(7):CD010041.
40. Kok N, Wiersma IC, Opmeer BC, et al. Sonographic measurement of lower uterine segment thickness to predict uterine rupture during a trial of labor in women with previous cesarean section: a meta-analysis. *Ultrasound Obstet Gynecol*. 2013;42:132–9.
41. Guiliano M, Closset E, Therby D, et al. Signs, symptoms and complications of complete and partial uterine ruptures during pregnancy and delivery. *Eur J Obstet Gynecol Reprod Biol*. 2014;179:130–4.
42. Najji O, Wynants L, Smith A, et al. Predicting successful vaginal birth after cesarean section using a model based on cesarean scar features examined by transvaginal sonography. *Ultrasound Obstet Gynecol*. 2013;41:672–8.
43. Gizzo S, Zambon A, Saccardi C, et al. Effective anatomical and functional status of the lower uterine segment at term: estimating the risk of uterine dehiscence by ultrasound. *Fertil Steril*. 2013;99:496–501.
44. Smith GC, Pell JP, Pasupathy D, et al. Factors predisposing to perinatal death related to uterine rupture during attempted vaginal birth after caesarean section: retrospective cohort study. *BMJ*. 2004;329:375.
45. Durnwald CP, Rouse DJ, Leveno KJ, et al.; National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network. The Maternal-Fetal Medicine Units Cesarean Registry: safety and efficacy of a trial of labor in preterm pregnancy after a prior cesarean delivery. *Am J Obstet Gynecol*. 2006;195:1119–26.
46. Cahill AG, Waterman BM, Stamilio DM, et al. Higher maximum doses of oxytocin are associated with an unacceptably high risk for uterine rupture in patients attempting vaginal birth after cesarean delivery. *Am J Obstet Gynecol*. 2008;199(1):32.e1–32.e325.]
47. Al Qahtani NH, Al Hajeri F. Pregnancy outcome and fertility after complete uterine rupture: a report of 20 pregnancies and a review of literature. *Arch Gynecol Obstet*. 2011;284(5):1123–6.
48. Grabarz A, Ghesquière L, Debarge V, et al. Cesarean section complications according to degree of emergency during labour. *EJOG*. 2021;256:320–5.
49. Darnal N, Dangal G. Maternal and fetal outcome in emergency versus elective caesarean section. *J Nepal Health Res Counc*. 2020;18(2):186–9.
50. Benzouina S, Boubkraoui Mel-M, Mrabet M, et al. Fetal outcome in emergency versus elective cesarean sections at Souissi Maternity Hospital, Rabat, Morocco. *Pan Afr Med J*. 2016;23:197. doi: 10.11604/pamj.2016.23.197.7401
51. National Institute for Health and Care Excellence. Cesarean Section CG132: NICE guideline. [Internet]. 2019 [cited 2023 Jun 16]. Available from: <http://www.nice.org.uk>

Disclaimer-These recommendations for "Birth After Cesarean Section " have been developed, to be of assistance to obstetricians, gynecologists, consulting physicians and general practitioners by providing guidance and recommendations for managing women with anemia and suffering from hemorrhagic conditions. The recommendations included here shouldn't be viewed as being exclusive of other concepts or as covering all legitimate strategies. The suggestions made here are not meant to dictate how a particular patient should be treated because they neither set a standard of care nor do they guarantee a particular result. To diagnose patients, choose dosages, and provide the best care possible while also taking the necessary safety precautions, clinicians must rely on their own experience and knowledge. The writers or contributors disclaim all responsibility for any harm and/or damage to people or property resulting from the use or operation of any techniques, goods, guidelines, or ideas presented in this content.