


A Potential for Consenting Pregnant Women who will have Normal Delivery, Regarding Possible Labor Interventions as Cesarean Operation

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Abstract

Background: Interventions of labor dystocia depend on each case, and they include but are not limited to: Cesarean section (CS), and Oxytocin administration. These modalities need Consenting the patient before intervening. It was found that taking consent in a short time might be not sufficient for the patient's understanding and needed discussion.

Method: Review of literature.

Results: Factors of Prolonged labor are: nulliparous women, increased maternal age, increased maternal weight (overweight and obesity), larger birth weight, increased gestational age, poverty, and epidural anesthesia (EA). On the other hand, there are significantly evidenced factors which can enhance the progress of labor as continuous labor support by a trained staff. Recommended number of antenatal care (ANC) appointments by World Health Organization (WHO) is eight or more. ANC visits could present the time needed for discussions regarding informed consent of possible labor interventions.

Conclusion: Taking informed consent of pregnant women in advance during ANC visits can provide the time necessary for counseling about common labor interventions as CS.

Keywords: Cesarean Section, Informed Consent, Prolonged Labor, Dystocia, Antenatal.

List of Abbreviations

ANC: Antenatal Care
CTG: Cardiotocograph
CI: Confidence Interval
CS: Cesarean Section
CSE: Combined Spinal Epidural
EA: Epidural Anesthesia
FH: Fetal Heartbeats
FHR: Fetal Heart Rate
IQR: Interquartile Range

MFTI: Maternal Fetal Triage Index
NICU: Neonatal Intensive Care Unit
OTAS: Obstetric Triage Acuity Scale
OR: Odds Ratio
Oxygen: O₂
PCA: Patient Controlled Intravenous Analgesia
PPH: Postpartum Hemorrhage
RR: Relative Risk
ROM: Rupture of Membrane
WHO: World Health Organization

Introduction

Among the highly common indications of CS, is prolonged labor [1-5]. In a retrospective cohort study, the increased duration of second stage of labor increased the risk of intrapartum CS by

more than two times (Odds Ratio (OR): 2.60, 95% Confidence Interval (CI): 2.50, 2.70) [5]. Calculation of Relative Risk (RR) would be the related measure of association referring to the type of the study. In a survey in a tertiary care hospital among women

who agreed to participate in the study and who had CS, approximately 71% of them had it non-electively as an emergency intervention, and about 99% did not know about anesthesia's type before operation [6]. Emergency CS is an unplanned operation that was conducted due to occurrence of complications during labor [6]. Another definition is intrapartum CS [2]. When there is an urgent indication for emergency CS, the time available could be not adequate for discussion with the mother or her relative/s about the procedure [6].

The Survey beforementioned was done in a tertiary hospital, and this might mean co-morbid conditions among the participants that might have led to a high percentage of emergency CS (the reasons for referral were not reported); it was stated from a case control study that the frequency of emergency CS was higher among women with gestational diabetes than who did not have this disease, and the risk was about two times among nulliparous participants (OR after logistic regression: 1.9, 95% CI: 1.03 - 3.5) [7].

In a prospective observational study about the effect of prolonged labor, the percentage of caesarean delivery due to prolonged labor among pregnant women who had complications during labor was 77%, but those who have co-morbid conditions were not included [8]. In that Cohort research, there was a source of selection bias (and possibly information bias) as data was only collected if there were complications during prolonged labor although the exposure under study was prolonged labor; Moreover, a calculation of RR would be helpful based on the type of the study, but it was not reported.

It would be helpful to distinguish emergency CS from urgent CS for prioritization of patients if the number of them exceeded the available resources for surgeries; There are many tools for triage of obstetric cases. Maternal Fetal Triage Index (MFTI) considers the extent of vital signs abnormalities in addition to many other signs, symptoms, and factors; and it has five levels [9]. (I) Level number one has the highest priority necessitating immediate management, examples of this level are: Maternal Oxygen (O₂) level which is less than 93%, maternal heart rate which is less than 40 beats per minute or more than 130; cord prolapse, (II) Level number two has urgent priority; examples include: Maternal O₂ level that is less than 95%, maternal temperature that is more than 38.3 degrees Celsius, Fetal Heart Rate (FHR) that is more than 160 beats per minute for more than one minute.

The Obstetric Triage Acuity Scale (OTAS) for pregnancy at 20 weeks of gestation or more, also has five levels; (I) The first level (Level 1) is called resuscitative, among the examples are: maternal severe respiratory distress, cord prolapse, (II) The second level (level 2) is called emergent, such as maternal moderate respiratory distress, Fetal Heartbeat (FH) abnormalities, (3) The third level (level 3) is called urgent, such as maternal mild dehydration, maternal mild respiratory distress [10]. Regarding the present paper, the aim is to highlight a suggestion regarding taking consent during prenatal care visit/s from pregnant women for common potential labor interventions as CS.

Method

Literature review, using mainly contemporary references related to labor monitoring, labor progress, prolonged labor, CS, and

informed consent about CS. The present paper was a narrative non-systematic review, with no statistical quantitative analysis of data.

Findings

Labor Monitoring: Monitoring of Labor is important to assess progress; it can be done through using (includes but not limited to): Partogram (Partograph) [1], Cardiotocograph (CTG) [11], uterine activity monitoring [1], FHR monitoring [1], Labor curves [4], and maternal O₂ saturation monitoring [12].

First Stage of Labor: Active phase of labor occurs in the first stage of labor, and it is when there is rapid dilatation of cervix until it becomes 10 cm (complete dilatation) [4]. Latent Phase precedes this, and it extends from the onset of labor to 4-6 cm dilatation of cervix [4] (6 cm was recommended as the start of active phase. Active phase arrest occurs after Rupture of Membrane (ROM), and latent phase, with no further progression in dilation, although there was four hours of uterine contractions/ activity or six hours if there was Oxytocin use [3, 4].

Prolonged Second Stage of Labor: Prolonged Second Stage of Labor if there was no Epidural Anesthesia: pushing for more than or equal to two hours in multiparous pregnant women, and three hours in nulliparous [3]. If there was EA: pushing for four hours or more in nulliparous women, three hours or more in multiparous [3].

Prolonged Labor Terminologies and Management: There are several terms that are related to obstructed labor, such as difficult Labor [1], labor Dystocia, Prolonged labor, and Arrest of labor [1, 2]. When there is slow progression of normal delivery (longer duration), it is called labor protraction; while when there is no progression, the terminology is labor arrest [4]. Dystocia was defined as "abnormally slow or protracted labor" [3]. Interventions to manage dystocia in the first stage of labor, included: (1) Amniotomy (moderate level of evidence of reduction in labor duration after early amniotomy among nulliparous, low level of evidence of this effect when parity status was not sorted [1]), (2) Oxytocin use [1], (3) Amniotomy in addition to Oxytocin [1, 3, 4]; this modality had high level of evidence for reduction of first stage of labor [1] and total labor duration [1, 4]. If there was an induction of labor in a first-time delivery (nulliparous), but there was a need for CS (whether due to dystocia, or not reassuring condition of the fetus, while still in the latent phase, it could be considered as failed induction [13]. A common intervention for managing prolonged labor is CS [1-4].

Complications of Prolonged Labor: It was revealed that as the length of the latent phase increases, there were consequences noticed, such as the need for blood transfusion to the mother, and risk of newborn admission to neonatal intensive care unit (NICU) [13]. The risk of post-partum hemorrhage (PPH) was about two times more due to prolonged labor [5], and there was risk of NICU admission (before adjustment for other variables) [5]. Prolonged labor resulted in the occurrence of: O₂lack among 21% of newborns; four percent and two percent were for stillbirth, and neonatal deaths, respectively, while dehydration occurred among 64% of mothers [8].

Prolonged Second Stage of labor was associated with PPH, infectious inflammation of the endometrium, increased tempera-

ture, among few more effects in the mother; in addition to sepsis in newborns, and NICU entry [14]. Second Stage Arrest also was associated with maternal (e.g. PPH), and neonatal (e.g. sepsis, brain ischemia, NICU admission) complications [4]. It was reported that upon the occurrence of this arrest, the pregnant is to get information about the benefits and risks of possible interventions, and the risk of prolonged second stage of labor [4]. Moreover, the need for such discussion might be needed earlier when there is diagnosis of active phase arrest [4].

Risk Factors of Prolonged Labor: Can dystocia risk be known? The answer to this question can be found in literature as there are risk factors for this outcome, including but might be not limited to: (1) First time delivery [4]; the percentage of women who had less than three hours of second stage of labor was lower among nulliparous women than non-nulliparous (76% vs. 87%) [5], (2) Larger fetus [4]; the average birth weight was more among nulliparous who had prolonged second stage of labor than whose duration of second stage was less than three hours [5], (3) Maternal obesity [4], (4) Maternal overweight among nulliparous [5], (5) Increased age of the pregnant woman [4, 5], (6) Poverty [5], and (7) Gestational age [5]. About 28%, and 22% of Nulliparous women who had prolonged second stage of labor were overweight, and at extreme deprivation (category number one of deprivation index), respectively; while 26% and 19% of nulliparous whose second stage of labor was less than 3 hours were in that category of body mass index and that poverty level, respectively [5].

Giving birth at gestational age that equals 40, 41, or 42 weeks was more among nulliparous women who had prolonged stage of labor than those who had less than three hours second stage of labor (33%, 30%, 6% vs. 32%, 26%, 3%; respectively) [5]. The relation of poverty and gestational age (41, 42 weeks) with prolonged second stage of labor was also shown among non-nulliparous women [5], (8) EA was associated with increased duration of second stage of labor [1, 5]. EA use among nulliparous women was associated with prolonged duration of labor (first and second stages) than combined spinal epidural (CSE) anesthesia [1].

In a retrospective cohort study, labor duration was significantly lower among women who used Patient Controlled Intravenous Analgesia (PCA), compared to among who used EA [12], but in some other studies there was no significant difference [1]. It is good to notice that the generalizability of the results about the effect of anesthesia techniques would be according to using the same anesthetic agents which were studied in those studies, and if the used agent was not mentioned (for EA for example), further researches might be needed to have reliable conclusion.

Enhancing Progress of Labor

To enhance the progress during labor, continuous support can be beneficial [1]; through continuous presence of a trained attendant (one for each pregnant woman having normal delivery) to provide advice, give updates, and reassurance [4]. There was a systematic review and meta-analysis on this regard in 2017, pooled RR of spontaneous vaginal delivery when there was continuous support was significant (RR: 1.08, 95% CI: 1.04 - 1.12), there was 31% reduction in the duration of labor (mean difference: -0.69, 95% CI: -0.34- to -1.04], and 25% decrease in the

risk of CS (RR: 0.75, 95% CI: 0.64 - 0.88) [15]. It was recommended that enough time for the latent phase, active phase, and second stage be allowed before intervening [1].

To guide when to intervene, there was a recommendation: to establish threshold for action in labor curve in partograph; that is related to women in each population so the data represent them, as many characteristics can affect what constitutes normal labor, such as maternal age, and parity [1]; this includes having labor curves for: (1) Parity categories [1], (2) Among women who had augmentation, and who had not [1], (3) Amid women who had co-morbid conditions as pre-eclampsia, and who did not [1]. Also, it was concluded from a scoping review that there is a need for: (1) standardized definition of prolonged labor, to help in determining progress of labor, (2) guidelines for point of care management if there was prolonged labor [2]. It was reported that the exact duration of second stage of labor and when to intervene are not clear [5].

It was recommended from a cross-sectional study that if a need for operational delivery was assumed, then the discussion about it should be during Antenatal care (ANC) visits which are close to the due date of labor [6]. From an observational analytical study, the later recommendation was for all nulliparous women during ANC visits through enquiring about their preference if prolonged labor occurred [5]. From analysis of some data related to pregnant women who had emergency CS, it was suggested that informed consent be taken during attendance of ANC appointments for all pregnant women, and that they have access to information at the beginning of the pregnancy about the procedure [16]. As recommended by the World Health Organization (WHO), ANC visits number is eight or more during pregnancy [17]. ANC can be an appropriate chance to have counseling about CS, and also regarding types of anesthesia that are commonly used in CS or normal delivery.

Discussion

According to the American College of Surgeons "Patients should understand the indications for the operation, the risk involved, and the result that it is hoped to attain." [18]. There is a risk of complications from CS during and after the surgery [19], they include but are not limited to the following: (1) Hemorrhage during or subsequent to surgery, the upper limit usually is more than bleeding from non-operative labor which is 1000 ml compared to 500 ml, respectively; and there can be a need for blood transfusion, (2) Injuries to other organs during surgery, as urinary bladder and intestine, (3) Complications related to anesthesia, such as: regional anesthesia can lead to hypotension, there could be unsuccessful intubation during general anesthesia, (4) Injury to the fetus (this is a rare complication), the factors for this are: urgent abstraction of fetus, nonexistence of adequate training of staff performing the procedure, (5) Infectious inflammation of the endometrium which is more common with CS than vaginal delivery, (6) Surgical site infection, (7) Thrombosis and embolism (thromboembolism) which are also more common in CS, (8) There can be chronic adhesions in the abdomen, (9) Extended length of stay in the hospital after surgery, (10) effects on the newborn, as respiratory distress (this is a rare complication). Regarding Oxytocin, there are contraindications (e.g. hypoxia and abnormality in CTG), and precautions (e.g. history of parity more than three times, multiple pregnancy); they need to be

considered before administering Oxytocin, and the consent of patient needs to be taken [11].

It was found that taking informed consent during labor time (when an operative delivery is decided) could be not sufficient for the patient's understanding and needed discussion [16]. Through review of 90 records of women who had emergency CS at the beginning of a year, it was found that, the median duration from taking consent during labor for operative delivery till the operation, was more than 40 minutes (median=48 minutes, inter-quartile range (IQR): 25-72) [16]. That duration was 26 minutes when the indication was an abnormality in FHR [16]. A notice is that there could be selection bias in the former study because there was no use of a random sampling technique.

During the process of taking informed consent, seeking avoidance of accelerating pregnant women stress (minimization of anxiety), was reported [16]. Before taking consent for labor interventions in advance during an ANC and in the subsequent visit after that, it is suggested that anxiety screening is carried out, and proper management (following related guidelines) if it was present. It is not confirmed if taking consent in a period that is not close to labor time would result in increasing anxiety of the expectant mother or not, and to how much extent, and what are the consequences; maybe these points form an opportunity for future researches.

The limitations in the present paper are: (1) As a narrative non-systematic literature review there was no specific pre-defined inclusion and exclusion criteria of publications, and this has a risk of bias in the selection of the sources of findings that were included in the review; (2) Because it was not a systematic literature searching strategy, there could be related findings to the topic/s reviewed which was not included; (3) As systematic review was not the type of the study, aggregation of results quantitatively was not conducted, and thus calculation of summary (pooled) statistical measures (as measure of association) was not possible.

Conclusion

This review is expected to be beneficial for considering taking informed consent about main possible labor interventions such as CS, during ANC visits. Studying the barriers of application of this approach and ways to handle them is recommended, along with determining the best timing during pregnancy.

Furthermore, for the monitoring and management during labor, there could be a need for a labor monitoring tool for nulliparous and another for non-nulliparous women and related guidelines including timing of needed interventions.

The final remark is through a question: Is there a need for ensuring availability of matched blood group Unit/bag before normal delivery as a precaution (as if there was a need for urgent or emergency CS) especially if there were risk factors of prolonged labor in the pregnant woman?

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Conflict of Interest Declaration

I declare nonexistence of any conflict of interest

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References

1. Myers, E. R., Sanders, G. D., Coeytaux, R. R., McElligott, K. A., Moorman, P. G., Hicklin, K., Grotegut, C., Villers, M., Goode, A., Campbell, H., Befus, D., McBroom, A. J., Davis, J. K., Lallinger, K., Fortman, R., & Kosinski, A. (2020). Labor Dystocia. Agency for Healthcare Research and Quality (US).
2. Bakker, W., Sandberg, E. M., Keetels, S., Schoones, J. W., Kujabi, M. L., Maaløe, N., Maswime, S., & van den Akker, T. (2024). Inconsistent definitions of prolonged labor in international literature: a scoping review. *AJOG global reports*, 4(3), 100360. <https://doi.org/10.1016/j.xagr.2024.100360>
3. LeFevre, N. M., Krumm, E., & Cobb, W. J. (2021). Labor Dystocia in Nulliparous Women. *American family physician*, 103(2), 90-96.
4. American College of Obstetricians and Gynecologists (ACOG) Committee on Clinical Practice Guidelines—Obstetrics, Cahill, A., Raghuraman, N., Gandhi, M., & Kaimal, A. (2024). First and second stage labor management. *Obstetrics & Gynecology*, 143(1), 144-162.
5. Young, C., Bhattacharya, S., Woolner, A., Ingram, A., Smith, N., Raja, E. A., & Black, M. (2023). Maternal and perinatal outcomes of prolonged second stage of labour: a historical cohort study of over 51,000 women. *BMC pregnancy and childbirth*, 23(1), 467. <https://doi.org/10.1186/s12884-023-05733-z>
6. Tripathy, S., Shubhashree, T., Sajeetha Kumari, R., & Mohapatra, S. (2020). Informed consent process before caesarean section: a study of patient's perspective regarding adequacy of consent process. *Indian J Obstet Gynecol Res*, 7(2), 239-242.
7. Boriboonhirunsarn, D., & Waiyanikorn, R. (2016). Emergency cesarean section rate between women with gestational diabetes and normal pregnant women. *Taiwanese Journal of Obstetrics and Gynecology*, 55(1), 64-67.
8. Rahman, S., Shahid, A. R., Sultana, R., Khatun, T., Hossain, T., Rahman, R., Rahman, N., & Khatun, A. (2023). Impact of Prolonged Labour on the Baby in Terms of Morbidity and Mortality. *AIMDR*, 9(6), 18-24.
9. Ruhl, C., Scheich, B., Onokpise, B., & Bingham, D. (2015). Content Validity Testing of the Maternal Fetal Triage Index. *Journal of obstetric, gynecologic, and neonatal nursing : JOGNN*, 44(6), 701-709. <https://doi.org/10.1111/1552-6909.12763>
10. Robert, B., & Mol, K. S. (2020). Obstetric triage scales. *International Journal of Obstetrics, Perinatal and Neonatal Nursing*, 6(2), 84-91.
11. Royal Cornwall Hospitals, NHS Trust. Oxytocin in the First and Second Stage of Labour Clinical Guideline V3.2, 2024. Available from: <https://doclibrary-richt.cornwall.nhs.uk/DocumentsLibrary/RoyalCornwallHospitalsTrust/Clinical/MidwiferyAndObstetrics/OxytocinInTheFirstAndSecondStageOfLabourClinicalGuideline.pdf> [last accessed April 18 2025].
12. Thorbiörnson, A., da Silva Charvalho, P., Gupta, A., & Stjernholm, Y. V. (2020). Duration of labor, delivery mode and maternal and neonatal morbidity after remifentanyl patient-controlled analgesia compared with epidural analgesia. *European*

- journal of obstetrics & gynecology and reproductive biology: X, 6, 100106. <https://doi.org/10.1016/j.eurox.2019.100106>
13. Grobman, W. A., Bailit, J., Lai, Y., Reddy, U. M., Wapner, R. J., Varner, M. W., Thorp, J. M., Jr, Leveno, K. J., Caritis, S. N., Prasad, M., Tita, A. T. N., Saade, G., Sorokin, Y., Rouse, D. J., Blackwell, S. C., Tolosa, J. E., & Eunice Kennedy Shriver National Institute of Child Health and Human Development Maternal-Fetal Medicine Units Network (2018). Defining failed induction of labor. American journal of obstetrics and gynecology, 218(1), 122.e1–122.e8. <https://doi.org/10.1016/j.ajog.2017.11.556>
14. Pergialiotis, V., Bellos, I., Antsaklis, A., Papapanagiotou, A., Loutradis, D., & Daskalakis, G. (2020). Maternal and neonatal outcomes following a prolonged second stage of labor: A meta-analysis of observational studies. European journal of obstetrics, gynecology, and reproductive biology, 252, 62–69. <https://doi.org/10.1016/j.ejogrb.2020.06.018>
15. Bohren, M. A., Hofmeyr, G. J., Sakala, C., Fukuzawa, R. K., & Cuthbert, A. (2017). Continuous support for women during childbirth. The Cochrane database of systematic reviews, 7(7), CD003766. <https://doi.org/10.1002/14651858.CD003766.pub6>
16. Salmeen, K., & Brincat, C. (2013). Time from consent to cesarean delivery during labor. American journal of obstetrics and gynecology, 209(3), 212.e1–212.e2126. <https://doi.org/10.1016/j.ajog.2013.05.004>
17. World Health Organization (WHO). WHO Recommendations on Antenatal Care for a Positive Pregnancy Experience: Summary. Geneva, Switzerland: WHO; 2018.
18. American College of Surgeons. Informed Consent. Available from: <https://www.facs.org/for-medical-professionals/education/for-your-patients/medical-professionals/informed-consent/> [Last accessed April 17 2025]
19. Aujang E.R. Complications of Cesarean Operation; Caesarean Section. 2018. Available from: <https://www.intechopen.com/chapters/60912> [Last accessed April 16 2025].