Journal of Cardiovascular Disease Research

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

ORIGINAL RESEARCH

STUDY OF FETOMATERNAL OUTCOME IN WOMEN UNDERGOING CAESEREAN SECTION IN FIRST VS SECOND STAGE OF LABOUR

Dr Akuskar Roshani S[1], Dr Chalwade Suhas P[2], Dr Sawrikar Chetan[3]

[1]Assistant Professor, Department of OBGY, MIMSR Medical College, Latur, India.
[2]Associate Professor, Department of Surgery, Dr. N. Y. Tasgaonkar Institute of Medical Sciences, India.
[3]Assistant Professor, Department of OBGY, MIMSR Medical College, Latur, India.

Corresponding Author:
Dr Sawrikar Chetan, Assistant Professor, Department of OBGY, MIMSR Medical College, Latur, India.
Email: chetan.sawrikar@gmail.com

Received Date: 30/12/2022 Acceptance Date: 04/03/2023

ABSTRACT

Background: Caesarean section can be performed before labour, during first and second stages of labour. Present study was aimed to compare fetomaternal outcome in women undergoing caesarean section in first stage vs second stage of labour at a tertiary hospital. **Material and Methods:** Present study was prospective, comparative study, conducted in pregnant women, between 21-35 years of age, Singleton, term pregnancies, low risk & fit for vaginal delivery underwent emergency LSCS. Pregnant women were divided into 2 groups as group 1 (LSCS in the first stage of labour) & group 2 (LSCS in the second stage of labour). **Results:** Maternal complications such as blood transfusions (4 % vs 7 %), bladder high up (1 % vs 10 %), hematuria (2 % vs 17 %), unintended extensions (2 % vs 14 %), wound dehiscence (3 % vs 11 %) & febrile morbidity (4 % vs 16 %) were more among women underwent LSCS in second stage of labour, difference was statistically significant. Neonatal morbidities such as Apgar Score <7 at 5 min (2 % vs 6 %), Neonatal septicaemia (2 % vs 10 %), Intubation not for meconium (1 % vs 7 %), NICU stay >24 hrs (2 % vs 19 %) were more in women underwent LSCS in second stage of labour, difference was statistically significant. Fetal injuries (2 %) were noted only in women who underwent LSCS in second stage of labour. **Conclusion:** Maternal complications (blood transfusions, hematuria, unintended extensions, wound dehiscence & febrile morbidity) & neonatal morbidities (Apgar Score <7 at 5 min, Neonatal septicaemia, Intubation not for meconium & NICU stay >24 hrs) were more in women underwent LSCS in second stage of labour.

Keywords: caeserean section, first stage, second stage of labour, maternal outcome, neonatal outcome

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

INTRODUCTION

Caesarean delivery is defined as the birth of the fetus through incisions in the abdominal wall and the uterine wall. Caesarean is the most commonly performed major abdominal operation in women all over the world.[1,2] Caesarean section can be performed before labour, during first and second stages of labour.

Caesarean sections done at full cervical dilatation with impacted head are difficult and associated with increased incidences of Maternal and Fetal morbidities.[3] Second stage caesarean section is a difficult procedure as it is associated with the deeply engaged fetal head, less amount of liquor and thinned out lower uterine segment, thus it can lead to high risk of maternal morbidities, such as tearing of the lower uterine segment, extension of the uterine incision, injury to the urinary bladder, postpartum pyrexia, prolonged catheterization, and hospitalization.[4,5]

Neonatal mortality and morbidity due to hypoxia and fetal trauma remains to be one of the major issues regarding the CSs performed in the second stages of labour.[6] Decision making for CS in the second stage of labour is one of the greatest challenges in current obstetric practice. Present study was aimed to compare fetomaternal outcome in women undergoing caesarean section in first stage vs second stage of labour at a tertiary hospital.

MATERIAL AND METHODS

Present study was single-center, prospective, comparative, observational study, conducted in department of Obstetrics & Gynaecology, at MIMSR medical college & hospital, Latur, India. Study duration was of 1 year (January 2021 to December 2021). Study was approved by institutional ethical committee.

Inclusion criteria

- Pregnant women, between 21-35 years of age, Singleton, term pregnancies, low risk & fit for vaginal delivery underwent emergency LSCS, willing to provide written informed consent for participation.

Exclusion criteria

- Age <19 years and >35 years
- Pregnant women with preterm labour, antepartum haemorrhage, previous caesarean section OR hysterotomy
- With known medical disorders (Chronic Hypertension, Diabetes mellitus, heart disease) that may need preterm delivery.
- Gross congenital anomalies, IUGR, Rh incompatibility
- Any risk detected either by clinical findings or investigations for normal delivery.

Pregnant women who satisfy inclusion/exclusion criteria were divided into 2 groups.

• Group 1 - Caesarean delivery in the first stage of labour

• Group 2 - Caesarean delivery in the second stage of labour

Study was explained & a valid informed consent was taken. After enrolment, a thorough history and physical examination was done as per proforma. Maternal age, pre pregnancy BMI, gestational age, relevant obstetric data, labour course (induction/ augmentation of labour, oxytocin required), indications for caesarean section, birth weight, and the APGAR score of the new born at the 5th minute, and neonatal intensive care unit

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

admission, duration of hospital stay, postoperative complications, maternal and neonatal morbidities were recorded. Follow-up was kept till discharge for mothers & for 14 days in neonates.

Data was collected and compiled using Microsoft Excel, analysed using SPSS 23.0 version. Frequency, percentage, means and standard deviations (SD) was calculated for the continuous variables, while ratios and proportions were calculated for the categorical variables. Difference of proportions between qualitative variables were tested using chi-square test or Fisher exact test as applicable. P value less than 0.5 was considered as statistically significant.

RESULTS

In present study, 100 women underwent caesarean delivery in the first stage of labour (Group 1) were compared with 100 women underwent caesarean delivery in the second stage of labour (Group 2). Mean maternal age, mean period of gestation & number of nulliparous women in group 1 & 2 were comparable & no statistically significant difference was noted. While higher dilatation of cervix at delivery (5.5 ± 2.4 cms vs 10 cm), more number of patients induced/augmented for labour (54 % vs 83 %), more duration of labor (6.48 ± 2.79 hrs vs 10.92 ± 2.18 hrs), higher operative duration (36.23 ± 7.84 min vs 46.23 ± 9.46 min), prolonged Hospital Stay (6.23 ± 1.83 days vs 9.7 ± 2.5 days) were noted among women underwent LSCS in second stage of labour, difference was statistically significant.

Table 1: General characteristics

Characteristics	**Group 1 (n-100)**	**Group 2 (n-100)**	**P-value**
Mean maternal age	24.1 ± 3.97	23.40 ± 3.70	0.740
Mean period of gestation	38.24 ± 1.8	39.05 ± 2.01	0.978
Nulliparous women	82 (82 %)	78 (78 %)	0.312
Mean dilatation of cervix at delivery	5.5 ± 2.4	10	<0.001
No of patients induced/augmented	54 (54 %)	83 (83 %)	<0.001
Duration of labor (hrs)	6.48 ± 2.79	10.92 ± 2.18	<0.001
Operative duration (min)	36.23 ± 7.84	46.23 ± 9.46	<0.001
Length of Hospital Stay (days)	6.23 ± 1.83	9.7 ± 2.5	<0.001

Atonic PPH and Uterine artery ligation were comparable & no statistically significant difference was noted among two groups. Other complications such as blood transfusions (4 % vs 7 %), bladder high up (1 % vs 10 %), hematuria (2 % vs 17 %), unintended extensions (2 % vs 14 %), wound dehiscence (3 % vs 11 %) & febrile morbidity (4 % vs 16 %) were more among women underwent LSCS in second stage of labour, difference was statistically significant.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

Table 2: Maternal complications

Maternal complications	Group 1 (n-100)	Group 2 (n-100)	P-value
Atonic PPH	5 (5 %)	7 (7 %)	0.061
Uterine artery ligation	5 (5 %)	7 (7 %)	0.061
Blood transfusions	4 (4 %)	7 (7 %)	0.004
Bladder high up	1 (1 %)	10 (10 %)	<0.001
Hematuria	2 (2 %)	17 (17 %)	<0.001
Unintended extensions	2 (2 %)	14 (14 %)	<0.001
Wound dehiscence	3 (3 %)	11 (11 %)	<0.001
Febrile morbidity	4 (4 %)	16 (16 %)	<0.001

Mean birth weight was comparable among two groups & no statistically significant difference was noted. Neonatal morbidities such as Apgar Score <7 at 5 min (2 % vs 6 %), Neonatal septicaemia (2 % vs 10 %), Intubation not for meconium (1 % vs 7 %), NICU stay >24 hrs (2 % vs 19 %) were more in women underwent LSCS in second stage of labour, difference was statistically significant. Fetal injuries (2 %) was noted only in women underwent LSCS in second stage of labour

Table 3: Neonatal outcomes.

Neonatal Outcomes	Group 1 (n-100)	Group 2 (n-100)	P-value
Mean birth weight	2.79 ± 0.63	2.83± 0.45	0.083
Apgar Score <7 at 5 min	2 (2 %)	6 (6 %)	<0.001
Neonatal septicaemia	2 (2 %)	10 (10 %)	<0.001
Intubation not for meconium	1 (1 %)	7 (7 %)	<0.001
NICU stay >24 hrs	2 (2 %)	19 (19 %)	<0.001
Fetal injuries	0	2 (2 %)	--

DISCUSSION

A great deal of technical difficulty is faced during the second stage caesarean due to engagement of the fetal head and is the main reason for the associated increased maternal and fetal morbidity.[7,8] A prolonged second stage of labour increases the attenuation of lower uterine segment and impaction of fetal head, which gives rise to a thin, easily lacerated lower uterine segment and cervix, which is predisposed to more extensions while delivering fetal head. Allen et al.,[9] found that maternal operative trauma and perinatal asphyxia were significantly increased in women undergoing caesarean section at full cervical dilatation compared to caesarean section at less than full dilatation.

Balasaheb K et al.,[10] studied 211 patient's undergone caesarean sections at full cervical dilatation, most cases were in the age group of 26 to 30 years (38.38%). The most common indication for emergency second stage caesarean section was non-progression of labour followed by obstructed labour. Atopic PPH, hematuria were the commonest intraoperative complications while pyrexia, prolong catheterization were the predominant post-operative complications NICU admission needed for 16.11% babies due to birth asphyxia and respiratory distress.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

Karunanithi PA et al.,[11] noted that there was no significant difference in age between cases and controls. Caesarean delivery performed in the second stage was associated with increased maternal morbidity such as difficulty in head delivery, haemorrhage, uterine angle extension, and the results were statistically significant between cases and controls (P<0.05). Apgar score <7 at five minutes was observed in very less proportion of cases (n=1, 2.78%) and controls (n=2, 0.66%). No statistically significant difference was seen in Apgar score at five minutes and fetal injury between the two study groups.

In study by Sinha S et al.,[12] caesarean deliveries performed in the second stage were associated with increased maternal morbidity in terms of blood loss, unintended extensions, blood transfusions, prolonged hospital stay, febrile morbidity. Similarly, Neonatal morbidity was much higher in the patient who underwent LSCS in 2nd stage of labor compared to 1st stage. There was increase in neonatal complications, for e. g. –5 minute Apgar <7, NICU admissions >24 hrs, neonatal septicaemia, (P-value <0.05).

In study by Anusha SR et al., [13] out of 90 cesarean sections 30 were performed in second stage and 60 in first stage.74 % were primigravida in second stage cs group. Arrest due to malposition was major indication for second stage (76% of cases). The most important complication among second stage cs group was PPH (76.7%) and majority of them needed blood transfusion. These complications were less in first stage cs group. Other Complications like increased duration of surgery (mean=53.3 min), post op fever (36% post op Wound infection (13.3%) was seen in second stage group. Fetal complications like low APGAR scores were seen in 16.7% of cases compared to first stage group and most of them needed resuscitation.

Urinary track injuries, transfusion requirement, uterine atonia and hysterectomy were significantly more frequent in women who underwent cesarean section in the second stage of the labour compared to women undergoing cesarean section in the first stage of the labour.[14] Extraction of the impacted fetal head may be done by the 'push method', i.e., pushing through the vagina, or by the 'pull method', i.e., a reverse breech technique. Numerous studies[15,16] have compared both these methods. However, both these methods are associated with an increased rate of maternal morbidity in the form of uterine extensions, postpartum hemorrhage, and fever. [17,18] Patwardhan technique is a unique technique that is used for delivering babies in second-stage caesarean sections.[19]

Second stage CS can be avoided by using partograph, rational use of oxytocin, proper and selective instrumental delivery, and lastly but most importantly the presence of senior and expert obstetricians in decision making. The second stage CS must be approached and conducted by an efficient team of doctors and other staff to get a healthy baby and a healthy mother.

CONCLUSION

Maternal complications (blood transfusions, hematuria, unintended extensions, wound dehiscence & febrile morbidity) & neonatal morbidities (Apgar Score <7 at 5 min, Neonatal septicaemia, Intubation not for meconium & NICU stay >24 hrs) were more in women who underwent LSCS in second stage of labour. Early diagnosis of fetal distress, non-descent, proper judgement for instrumental delivery can reduce morbidity associated with second stage LSCS.

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

Conflict of Interest: None to declare
Source of funding: Nil

REFERENCES

1. Allen VM, O' Connell CM, Baskett TF . 2006. Maternal morbidity associated with caesarean delivery without labor compared with induction of labour at term . Obstetrics and Gynecology 108: 286– 294.
2. Burrows LJ, Meyn LA , Weber AM . 2004. Maternal morbidity associated with vaginal versus caesarean delivery . Obstetrics and Gynecology 15 : 907 – 912 .
3. Hol K, Trivedi S, Jaiswal S, Darawade S. Comparison of maternal and fetal morbidity between Patwardhan method of second stage lower segment caesarean section and conventional "push and pull" method. Int J Reprod Contracept Obstet Gynecol 2019;8:4538-42.
4. McKelvey A, Ashe R, McKenna D, Roberts R. Caesarean section in the second stage of labour: a retrospective review of obstetric setting and morbidity. Journal of Obstetrics and Gynaecology. 2010;30(3):264-7.
5. Govender V, Panday M, Moodley J. Second stage caesarean section at a tertiary hospital in South Africa. The Journal of Maternal-Fetal & Neonatal Medicine. 2010 Oct 1;23(10):1151-5
6. S. L. Seal, G. Kamilya, J. Mukherji, S. K. Bhattacharyya, A. De, and A. Hazra, "Outcome in second- versus first-stage cesarean delivery in a teaching institution in Eastern India," American Journal of Perinatology, vol. 27, no. 6, pp. 507–512, 2010.
7. Murphy D J et al. Early maternal and neonatal morbidity associated with operative delivery in the second stage of labor: a cohort study. Lancet 2001; 358:1203-7.
8. O B et al. Delivery of the impacted head of the fetus at cesarean section after prolonged obstructed labor: a randomized comparative study of two methods. J obstet Gynecol 2002; 22:375-8.
9. Allen VM, O'Connell CM, Baskett TF. Maternal and Perinatal morbidity of caesarean delivery at full cervical dilatation compared with caesarean delivery in the first stage of labour. BJOG. 2005; 112:986-90.
10. Balasaheb Khadbade, Prashant Kale, Swapnil Mane (2022). Indication & Outcome of Second Stage Caesarean Section; a Longitudinal Study. Sch Int J Obstet Gynec, 5(12): 573-577.
11. Karunanithi PA, Chithra AK, Punithavathi J. Fetomaternal outcomes of cesarean delivery performed in the first and second stage of labor - an analytical prospective observational study. The New Indian Journal of OBGYN. 2022; 9(1):20-5.
12. Sinha S, Malik S, Dixit M. First versus second stage caesarean section: a comparison of maternal and neonatal outcomes. Int J Reprod Contracept Obstet Gynecol 2017;6:3477-80.
13. Anusha SR, Deepak AV, Jacob KJ. Maternal and neonatal outcome in second stage cesarean section versus first stage: a comparative study. Int J Reprod Contracept Obstet Gynecol 2018;7:4640-5

ISSN: 0975-3583,0976-2833 VOL14, ISSUE 03, 2023

14. Sucak A, Celen S, Akbaba E, Soysal S, Moraloglu O, Danışman N. Comparison of nulliparas undergoing cesarean section in first and second stages of labour: a prospective study in a tertiary teaching hospital. Obstet Gynecol Int. 2011;2011:986506.
15. Levy R, Chernomoretz T, Appelman Z, Levin D, Or Y, Hagay ZJ, Head pushing versus reverse breech extraction in cases of impacted fetal head during caesarean section Eur J ObstetGynecolReprodBiol 2005 121:24-6.
16. Fasubaa OB, Ezechi OC, Orji EO, Ogunniyi SO, Akindele ST, Loto OM, Okogbo FO, Delivery of the impacted head of the fetus at caesarean section after prolonged obstructed labor, a randomized comparative study of two methods J ObstetGynecol 2002 22:375-8
17. Sung JF, Daniels KI, Brodzinsky L, El-Sayed YY, Caughey AB, Lyell DJ, Caesarean delivery outcome after a prolonged second stage of laborAm J of ObstetGynecol 2007 197(306): e1-5.]
18. Alexander JM, Leveno KJ, Rouse DJ, Landon MB, Gilbert S, Spong CY, Comparison of maternal and fetal outcome from primary caesarean delivery during the second compared with the first stage of laborObstetGynecol 2007 109:917-21
19. Patwardhan BD, Motashaw ND, Caesarean Section J ObstetGynecol India 1957 8:1-15.