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## Our experience of maternal and foetal outcomes in 2<sup>nd</sup> stage caesarean deliveries-tertiary care centre study

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### Abstract

**Background:** Caesarean sections during the second stage labour are increasing in prevalence and accounts for approximately one fourth of all primary caesareans. The reasons for this are likely to be multifactorial. Second stage caesareans are more difficult technically, predisposing the mother to surgical injuries and may put the fetus at risk for morbidity due to hypoxia. Hence the increasing trend of caesarean sections at second stage is of major concern in modern obstetrics. We undertook this study to delineate the indications, maternal and foetal morbidity associated with caesarean section in the second stage of labour.

**Methods and Material:** This prospective study included consecutive 50 cases of caesarean section deliveries conducted in second stage of labor for singleton live pregnancies at term. The data in the study was collected till the discharge of both mother and baby by the use of a pretested proforma in all the pregnancies which satisfied inclusion criteria. The collected data was analyzed in terms of maternal demographics, indications of caesarean-section, intra-operative and postoperative complications and neonatal outcomes.

**Results:** In our series of 50 deliveries the incidence of 2nd stage caesarean sections were more seen in primigravida (74%) and 58% of them were in the age group of between 20-25 years. Arrest of descent due to malposition was the most common indication accounting for 64% and average procedure time was 45-60 minutes. PPH (74%) was being the most common complication, 58% required blood transfusion and there were 8 incidences of uterine tear. There were no incidents of bowel or bladder injury and maternal mortality. Neonatal outcome variables like APGAR<3 at 5 minutes, respiratory distress and neonatal death were observed in 9, 28 and 6 deliveries respectively.

**Conclusions:** We found that although second stage caesarean section was sometimes appropriate, there are no specific guidelines for performing Caesarean Section at full dilatation successfully and safely. A Caesarean Section in second stage of labor is a technically demanding procedure and has additional associated risks for both the mother and fetus due to the nature of emergency situation.

**Keywords:** Caesarean section, cervical dilatation, maternal and fetal outcome, PPH, uterine tear

### Introduction

Cesarean section is commonly perceived as a simple alternative to difficult vaginal birth. In Medical colleges and teaching hospitals in India the overall rate of caesarean deliveries is 24.4% [1]. Caesarean can be performed before labour, during first and second stages of labour. Second stage of labor begins when cervical dilatation is complete and ends with the fetal delivery. Second stage interventions are the methods to facilitate delivery of the fetus in the form of assisted vaginal delivery or by operative delivery. Worldwide, 10-20% of deliveries require some form of interventions and this intervention is frequently caesarean section. There has been a decrease in the rates of operative vaginal deliveries with a corresponding increase in CS deliveries in the second stage of labor. According to the Royal College of Obstetricians and Gynaecologists audit figures, about 35% of caesareans for singleton pregnancies are performed because of failure to progress in labour, of which a quarter occur at full cervical dilatation [2].

Both elective and emergency caesarean sections have a higher risk of complications than a vaginal birth. A caesarean section in second stage of labor has additional associated risks for both the mother and fetus due to the nature of this emergency situation. Caesarean sections during the second stage are increasing in prevalence. There is a recent trend to go to caesarean section in the second stage without due consideration of operative vaginal delivery. Incidence of second stage caesarean section has increased from 0.9% to 2.2% [3]. Recent decline in the use of instrumental delivery, a combination of lack of training and supervision for junior staff in second stage decision-making, a loss of technique associated with difficult-assisted delivery and

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concerns relating to maternal and neonatal morbidity with associated litigious issues might have contributed to this disturbing trend.

Maternal and infant outcomes may be affected by the timing of caesarean delivery. Cesarean section at full cervical dilatation with an impacted fetal head can be technically difficult and associated with increased trauma to the lower uterine segment and adjacent structures, as well as increased PPH, hemorrhage and infection. Recent data suggest that caesarean delivery in labor is associated with increased maternal morbidity compared with caesarean delivery with no labor [4]. Second stage caesarean section is associated with obstetric hemorrhage, bladder injury, extended uterine tear leading to broad ligament haematoma, infection and longer hospital stay (Landon *et al.*, 2005) [5].

Controversies regarding the fetal outcome in the cases of caesarean sections in second stage of labor are seen throughout literature. The delay of caesarean delivery until the second stage of labor may put the fetus at risk for morbidity. This might be due to intra-operative fetal hypoxia caused by strong uterine contraction, deeply impacted fetal head and longer duration of second stage labor. Neonatal morbidity in terms of NICU admissions, fetal acidemia, hypoxemia, prolonged NICU stay is reportedly higher in second stage caesarean sections.

The increasing trend of caesarean section at second stage is of major concern in modern obstetrics [6]. Decision making surrounding caesarean section in the second stage of labour is one of the greatest challenges in current obstetric practice. Hence this study is conducted to know the indications of second stage caesarean sections in Dept of Obstetrics and Gynecology and to assess maternal and neonatal outcome in second stage caesarean section.

### Subjects and Methods

This study was conducted in single institution in 50 consecutive caesarean sections done in second stage of labour. Second stage of labor was defined as the period of time from full cervical dilatation (10cm) to delivery.

### Selection Criteria

1. Age group between 18 to 40 yrs
2. Singleton pregnancy irrespective of parity
3. Period of gestation >37 weeks

### Exclusion criteria

1. Pregnancies with history of pre-existing medical illness.
2. Pregnancy with complications such as gestational diabetes or gestational hypertension.
3. Pregnancies with major fetal abnormalities and fetal growth restriction (<10th percentile birth weight for gestational age)
4. Multiple pregnancy
5. Premature rupture of membranes.

Type of anaesthesia and the operative technique were same in all the patients. The surgical technique of caesarean section was standardized. Prophylactic antibiotics were administered to all patients after clamping the umbilical cord. The data was collected in preformed proforma and written and informed consent was taken. All the data collected was pooled together and recorded and entered in master chart. Data analysis was done using SPSS version 17.

The maternal composite outcome in our study included one or more of the following: indications for second stage caesarean sections, Intraoperative complications including uterine artery

injury, extension of uterine incision, bladder injury, cervical laceration or requirement of hysterectomy, PPH, need for blood transfusion, duration of surgery, post operative wound infection, duration of hospital stay, puerperal sepsis and maternal death.

Neonatal outcome indicators included in our study were APGAR score of newborns at 5mins, respiratory distress, admission to NICU and resuscitation and death.

### Results

In our study total of 50 caesarean sections were performed in second stage of labour. Out of which 37 were primigravida and 13 were multigravida pregnancies. 58% of them were in the age group of 20-25 years, 28% were between 26-30 years and only 8% were above 30 years. The gestational age was between 37-39 weeks in 40 deliveries and only 3 deliveries were above 40 weeks. The demographic data presented in table 1.

The average operative time required from incision to closure was 45-60 min. Arrest of descent due to malposition and CPD were the indication for surgery in 32 and 16 cases. Failed vacuum delivery accounted for 4 cases.

**Table 1:** Maternal demographic details and labor characteristics

Variables		Number N=50	percentage
Age distribution	Less than 19years	3	6%
	20-25 years	29	58%
	26-30 years	14	28%
	31-35 years	4	8%
Parity distribution	Primigravida	37	74%
	Multi gravid	13	26%
Gestational age	37-38 weeks	19	38%
	38-39 weeks	21	42%
	39-40 weeks	7	14%
	> 40 weeks	3	6%
Indication for surgery	Arrest of descent Malposition	32	64%
	Arrest of descent CPD	16	32%
	Failed vacuum	4	8%

Second stage caesarean was associated with technical difficulty and hence operative complications were more. In our study majority of the cases i.e. 74% experienced PPH. However all of them were successfully managed conservatively with blood transfusion and supportive measures. There were incidences of uterine tear in 8 cases. 29 patients required blood transfusion. We didn't encounter any incidence of bowel or bladder injury. In the post operative period we observed wound infection and fever in 10 and 20 patients respectively. There were no cases of maternal deaths reported in our study. Operative and post operative maternal complications that occurred in second stage caesarean were documented in table 2.

**Table 2:** Incidence of intra operative and post-operative complications

Complication	Number (N-50)	Percentage
PPH	37	74%
Blood transfusion	29	58%
Incidence of uterine tear	8	16%
Bowel and bladder injury	None	0
Post op wound infection	10	20%
Post op fever	20	40%

Neonatal outcomes such as respiratory distress were seen in 28 out of 50 cases and resuscitation was needed in all 28 cases. There were 6 neonatal deaths in our study.

**Table 3:** Neonatal complications

Complication	Number (N=50)	Percentage
APGAR score <3 at 5 min	9	18%
Respiratory distress	28	56%
Need for resuscitation and NICU admission	28	56%
Neonatal death	6	12%

### Discussion

The rates of cesarean sections have risen steadily in the past two decades and may be associated with a disproportionate rise in second stage of cesarean sections. The strong medico-legal mind set in current obstetrics, and concerns over neonatal and maternal morbidity associated with difficult or failed instrumental delivery may contribute to this trend. The incidence of second stage cesarean sections was more in primigravida (74%) than multigravida (26%) in the present study; this observation was similar to study by Babre VM, 2017<sup>7</sup>. The increased frequency of second stage cesareans in primigravidas could be due to cephalopelvic disproportion, rigid perineum and lack of experience of previous labor. In our study arrest of descent due to malposition (64%) being the most common indication for cesarean sections in 2<sup>nd</sup> stage labour.

Caesarean section in the second stage of labor is a technically difficult and was 2.6 times likely to have intraoperative traumatic complication<sup>[8]</sup>. These difficulties were due to edematous lower segment, overstretched and thinned out lower segment and more impaction of presenting part in pelvis as the duration for second stage increases. The difficulty in delivering the fetal head arises because of lack of space between the bony pelvis, pelvic soft tissues and the fetal head and the degree that the head has moulded into the pelvis. The Mechanism of difficult delivery of the fetal head during cesarean section is not entirely clear. Intraoperative disengagement of the fetal head continues to pose a challenge to obstetricians. Several techniques have been reported in the literature and the method chosen may depend on the skill and experience of the surgeon.

The incidence of uterine incision extension in second stage cesarean sections may be as high as 30%<sup>[9]</sup>. It is thought that when performing cesarean sections at full dilatation, a higher incision in the uterus may be necessary. A standard incision may risk incising the bladder or the vagina, or may affect the integrity of the cervix. Lower-segment incisions may also be at increased risk of tearing and be more difficult to repair. In our study we experienced incidence of uterine tear in 8 (16%) deliveries, which were managed intraoperatively by repairing techniques.

Development of uterine atonia and requirement of uterine or hypogastric artery ligation in the case of severe hemorrhage are also found to be more frequent in cesarean section performed in the second stage of labor and can be due to the longer labor resulting in uterine fatigue. In our study 74% cases experienced PPH whereas study conducted by Shahla Baloch, *et al*<sup>[10]</sup> observed PPH in only 12.5%.

Maternal hemorrhage (>1000 ml) was reported to occur in between 4.7% and 10% of cesarean sections at full dilatation which increases the need of blood transfusion<sup>[11]</sup>. As compared to Asicioglu *et al*<sup>[12]</sup> which revealed a significant increase in mean blood loss in second stage cesarean sections, in our study 58% cases required blood transfusion. Studies have reported pelvic floor trauma, particularly bladder and bowel problems, in 50% of women at the five-year follow-up after Caesarean sections late in labour, even without attempted vaginal delivery

however we didn't encounter any bowel or bladder injury incident during our study.

Cebekulu and Buchmann from Johannesburg, South Africa, reporting on 39 cases and 39 controls, found that second-stage caesarean section was associated with more postoperative fever<sup>[13]</sup>. In the study by Shahla Baloch *et al*<sup>[14]</sup> wound infection was present in 8.33% cases. In our study we observed post operative wound infection and post operative fever in 20% and 40% deliveries respectively. There were no incidences of maternal deaths in our study. In various studies it has been quoted that duration of hospital stay for patients in second stage caesarean section is increased. In the study Seal *et al*<sup>[15]</sup>, the mean length of stay in the hospital after delivery was higher in second stage caesarean section i.e. Avg 6.4day. In our study mean length of hospital stay was 6.9 days.

Neonatal morbidity in terms of NICU admissions, foetal acidemia, hypoxemia, prolonged NICU stay is reportedly higher in second stage caesarean sections. This is likely to be a result of increasing fetal compromise with prolonged duration of delivery, not a result of the procedure. A recent study by Das S<sup>[16]</sup> demonstrated a statistically significant increase in admission to NICU, septicaemia, low 5 min Apgar (<3) and neonatal trauma. In our study APGAR score below 3 at 5 minutes were found in 18% after Second Stage caesarean sections. There were 28 cases required resuscitation procedures and NICU admission for respiratory distress. There was 12% neonatal mortality in our study.

The sample size, short follow up period, not assessing the instrumental deliveries which could be used to prevent second stage caesarean sections and effect of second stage caesarean sections on subsequent pregnancies were limitations of our study.

### Conclusion

Caesarean sections during the second stage are increasing in prevalence. Caesarean section at full cervical dilatation is associated with higher likelihood of adverse outcome for both mother and fetus. Maternal risks of second stage caesareans include major haemorrhage, longer hospital stay, greater risk of PPH, and extension tears of the uterine angle. We believe that caesarean delivery performed during the second stage of labour increases the incidence of fetal respiratory distress, admission to the neonatal intensive care unit and fetal death due to fetal head impaction into the maternal pelvis and prolonged second stage labour.

Decision making surrounding second stage CS is often challenging. There was little guidance from consultants in the decision-making stages related to second stage Caesarean sections. Involvement of senior obstetrician is desired regarding suitability and safety for trial of operative vaginal delivery or CS. Alarming the neonatologist beforehand are recommended in all difficult second stage deliveries. The modern management of the second stage of labor will have to balance the risks and benefits of the obstetric interventions, such as episiotomy, instrumental vaginal delivery and caesarean section which are used when the second stage labor is prolonged.

### References

1. Kambo I, Bedi N, Dhillon BS *et al*. A critical appraisal of caesarean section rates at teaching hospitals in India. *Int J Gynaecol Obstet*. 2002; 79:151-8.
2. Thomas J, Paranjothy S. Royal College of Obstetricians and Gynaecologists Clinical Effectiveness Support Unit. The national sentinel caesarean section audit report. London:

- RCOG Press, 2001.
3. Vousden N, Cargill Z, Briley A, Tydeman G, Shennan AH. Caesarean section at full dilatation: incidence, impact and current management. *The Obstetrician Gynaecologist*. 2014; 16(3):199-205
  4. Allen VM, O'Connell CM, Liston RM. Maternal morbidity associated with cesarean delivery without labor compared with spontaneous onset of labor at term. *Obstet Gynecol*. 2003;102:477-82
  5. Landon MB, Hauth JC, Leveno KJ, Spong CY, Leindecker S, Varner MW *et al*. Maternal and perinatal outcomes associated with a trial of labor after prior cesarean delivery. *New England Journal of Medicine*. 2004; 351(25):2581-9
  6. Unterscheider J, McMenamin M, Cullinane F. Rising rates of caesarean deliveries at full cervical dilatation: a concerning trend. *Eur J Obstet. Gynecol. Reprod Biol*. 2011; 157(2):141-144
  7. Babre VM, Bendre KR, Niyogi G. Review of caesarean sections at full dilatation. *Int J Reprod Contracept Obstet. Gynecol*. 2017; 6(6):2491-2493.
  8. 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(7):986-90
  9. Selo-Ojeme D, Sathiyathan S, Fayyaz M. Caesarean delivery at full cervical dilatation versus caesarean delivery in the first stage of labour: comparison of maternal and perinatal morbidity. *Archs Gynecol Obstet*. 2008; 278:245-9.
  10. Baloch S, Khaskheli M, Khushk IA, Sheeba A. Frequency of second stage intervention and its outcome in relation with instrumental vaginal delivery versus caesarean section. *J Ayub Med Coll Abbottabad*. 2008; 20(1):87-90.
  11. Murphy DJ, Liebling RE, Verity L, Swingler R, Patel R. Early maternal and neonatal morbidity associated with operative delivery in second stage of labour: a cohort study. *Lancet*. 2001; 358:1203-7.
  12. Asicioglu O, Gungorduk K, Yildirim G, Asicioglu BB, Gungorduk OC, Ark C *et al*. Second-stage vs first-stage caesarean delivery: comparison of maternal and perinatal outcomes. *Journal of Obstetrics and Gynaecology*. 2014a; 34:598-604.
  13. Cebekulu L, Buchmann EJ. Complications associated with caesarean section in the second stage of labour. *Int J Gynaecol Obstet*. 2006; 95:110-14.
  14. Baloch S, Khaskheli M, Khushk IA, Sheeba A. Frequency of second stage intervention and its outcome in relation with instrumental vaginal delivery versus section. *J Ayub Coll Abbotabad*. 2008; 20(1):87- 90
  15. Subrata Lall Seal, Gourisanakar Kamilya, Joydev Mukherji, Subir Kr Bhattacharyya, Alok De, Avijt Hazra. Outcome in second – Versus First Stage Caesarean Delivery in a teaching institution in Eastern India. *American Journal of Perinatology*. 2010; 27:06,
  16. Das S, Sarkar SK. Fetomaternal outcome in second versus First stage caesarean delivery in a tertiary rural medical college. *IOSR J Dent Med Sci*. 2014; 13(12):28-30.