

Maternal and Fetal Complications during Cesarean Section Done in Second Stage of Labour

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Abstract

Introduction: Second Stage of labor begins with complete dilatation of cervix and ends with fetal delivery. Prolonged second stage of labour is diagnosed if the duration exceeds 2 hrs in nullipara and 1 hr in multipara, when no regional anaesthesia is used. Cesarean section at full dilatation, with or without attempt at operative vaginal delivery, is a more challenging surgical procedure than a first stage cesarean section and carries a higher rate of maternal morbidity.

Material & Method: This Prospective Study was conducted in the Department of Obstetrics and Gynaecology, BNMCC, GNDH, Government Medical College, Amritsar from March, 2020 to March, 2021.

Inclusion Criteria: All women at term and preterm with singleton pregnancies willing to participate.

Exclusion Criteria: Patients refusing / not willing to participate in the study, Multi fetal gestation, History of Previous caesarean section, Abnormal Placentation e.g. Vasa previa and complete placenta previa, Active genital herpes infection, Cervical Cancer, Prior Myomectomy. Duration of labor & Indication for LSCS was noted. Maternal and fetal complications were observed.

Results: In our study 150 women, who underwent cesarean section during second stage of labour, were selected according to exclusion and inclusion criteria. Most of women (66%) were referred patients and rest were booked patients who ended up in cesarean section. It was observed that labour dystocia was most common indication seen in our patients followed by fetal distress. Majority of them were referred patients, and from rural background who did not have proper antenatal checkup.

Conclusion: This implies good antenatal checkup and recognition of complications can reduce the risk of prolonged second stage of labour. Difficult access to the healthcare facility, delay in referring the patient to the tertiary care centre increases the rate of cesarean section in second stage of labour. Timely decision for cesarean section and neonatal facilities can reduce the number of fetal complications.

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Introduction

Series of events that take place in the genital organs in an effort to expel the products of conception (fetus, placenta and membranes) out of the womb in the outer world is called labour [1]

Second Stage: It begins with complete dilatation of cervix and ends with fetal delivery. It has 2 phases:

- Propulsive Phase: It starts from full dilatation upto the descent of presenting part to the pelvic floor.
- Expulsive Phase: It is distinguished by maternal bearing down efforts and ends with the delivery of the baby. Mean duration of second stage of labour is 20 min in multipara & 50 min in nullipara.

Prolonged second stage of labour is diagnosed if the duration exceeds 2 hrs in nullipara and 1hr in multipara, when no regional anaesthesia is used. One or more hour is permitted in both nullipara and multipara when regional anaesthesia is used during labour.

Disorders of Second Stage of Labour: • Protraction of descent: When descent of the presenting part (station) is less than 1cm /hr in nullipara and 2cm/hr in multipara. • Arrest of descent: When no progress in descent (no change in station) is observed over a period of atleast 1 hr [2]

Cesarean section at full dilatation, with or without attempt at operative vaginal delivery, is a more challenging surgical procedure than a first stage cesarean section and carries a higher rate of maternal morbidity [3,4]

The morbidity related to a prolonged second stage is directly correlated with the incidence of extension of the uterine angles and prolonged surgical time, bladder injury and increased incidence of postpartum hemorrhage, pyrexia and length of hospital stay [5,6,7]

More morbidity is seen in cesarean section at full dilatation due to overstretched and

thinned out lower segment, edematous lower segment and more impaction of presenting part in pelvis.

Neonatal complications following operative delivery in second stage include fetal acidemia, trauma (cephalhematoma and intracranial hemorrhage; lacerations and facial nerve palsies) [8] and subsequent neonatal intensive care unit (NICU) admissions. The incidence of fetal acidemia is increased in neonates who are delivered by cesarean section after unsuccessful instrumental attempt [9]

Material and Methods

A Prospective Study was conducted in the Department of Obstetrics and Gynaecology, BNMCC, GNDH, Government Medical College, Amritsar from March, 2020 to March, 2021.

Inclusion Criteria: All women at term and preterm with singleton pregnancies willing to participate.

Exclusion Criteria: • Patients refusing / not willing to participate in the study. • Multi fetal gestation. • History of Previous caesarean section. • Abnormal Placentation e.g. Vasa previa and complete placenta previa. • Active genital herpes infection, Cervical Cancer. • Prior Myomectomy.

After written informed consent, patients were enrolled for the study

On admission: • All patients had undergone general, systemic and obstetrical examination.

Labour was monitored according to established departmental protocols (Partograph). • Details including patient's antenatal history. Maternal Age, Weight, Height, Body mass index (BMI), Socioeconomic status, Parity, Period of Gestation, Medical condition – Gestational diabetes mellitus, Hypertension, Hypothyroidism etc. Presence of premature rupture of membrane or not. •

Pelvic Examination in latent phase of labour .

Intrapartum Monitoring: • Mode of delivery (vaginal, instrumental, caesarean section) was noted. • Duration of labour was noted. • Indication for LSCS was noted. • American college of Obstetrics and gynecology (ACOG) guideline had been followed for diagnosis of arrest of active phase labour (atleast 4 hrs of adequate contraction) and arrest of second stage of labour (1 hour for multipara and 2 hour for primigravida). • Details of the newborn were noted (sex, weight, APGAR at 1 and 5 minutes, neonatal ICU

admission required, etc.). • Liquor – Clear/meconium stained was noted. • Any postpartum complications like post-partum hemorrhage or Infection was noted.

Ethical Consideration: The study was conducted after approval from the Institutional Ethical Committee, Govt. Medical College, Amritsar

STATISTICAL ANALYSIS: The data obtained was assessed and documented for the variables and was analysed statistically.

Results:

Table 1: Showing age wise distribution age (Years) (Showing distribution according to age group).

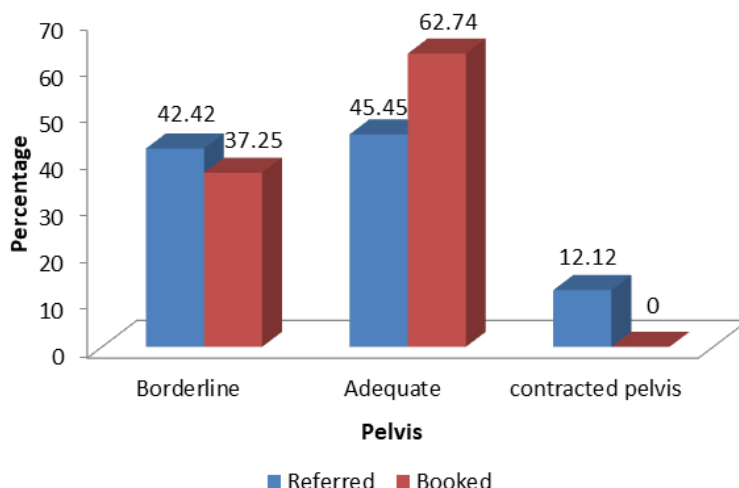
Age	No of cases	Percentage
<20	23	15.33%
21-25	60	40.00%
26-30	57	38.00%
31-35	7	4.67%
>35	3	2.00%
Total	150	100.00%

As seen from the above table, 23 women (15.33%) were of age group (less than 20 yr), 60 women (40.00%) were of age group (21-25yr), 57 women (38.00%) were of age group (26-30yr), 7 women (4.67%) were of age group (31-35 yr), 3 women (2.00%) were of age group (more than 35yr).

Table 2: Showing parity wise distribution

Parity	Referred (n=99)		Booked (n=51)		Total	
	No. of cases	%age	No. of cases	%age	No. of cases	%age
PrimiGravida	85	85.85	48	94.11	133	88.66
Multi Gravida	14	14.14	3	5.8	17	11.33

In total 150 cases, 133 cases (88.66%) were primigravida and 17 cases (11.33%) were multigravida. Out of 99 referred cases, 85 cases (85.85%) were primigravida and 14 cases (14.14%) were multigravida. Out of 51 booked cases, 48 cases (94.11%) were primigravida and 3 cases (5.8%) were multigravida.



Out of total 150 cases, 61 cases (40.66%) had borderline pelvis, 77 cases (51.33%) had adequate pelvis, 12 cases (8.00%) had contracted pelvis. In referred cases, 42 cases (42.42%) had borderline pelvis, 45 cases (45.45%) had adequate pelvis, 12 cases (12.12%) had contracted pelvis. In Booked cases, 19 cases (37.25%) had borderline pelvis, 32 cases (62.74%) had adequate pelvis.

Table 3: Causes of high risk pregnancy

HIGH RISK	Referred (n=99)		Booked (n=51)		Total	
	No. of cases	%age	No. of cases	%age	No. of cases	%age
Gestational Hypertension	38	38.38	4	7.84	42	28.00
Thyroid Disorder	8	8.08	5	9.80	13	8.67
Gestational Diabetes Mellitus	4	4.04	0	0.00	4	2.67
Anaemia	10	10.10	4	7.84	14	9.33
Deranged LFT	7	7.07	3	5.88	10	6.67
Total	67	67.67	16	31.37	83	55.33

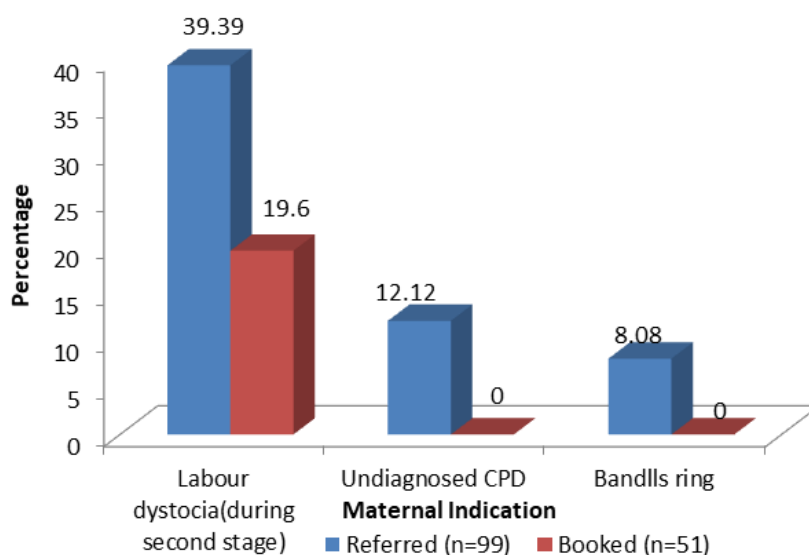
Table 3, showing distribution according to the causes of high risk pregnancy:

Out of total 150 cases, 42 cases (28.00%) were of gestational hypertension, 13 cases (8.67%) were of thyroid disorder, 4 cases (2.67%) were of gestational diabetes mellitus, 14 cases (9.33%) were of anemia, 10 cases (6.67%) were of deranged LFT.

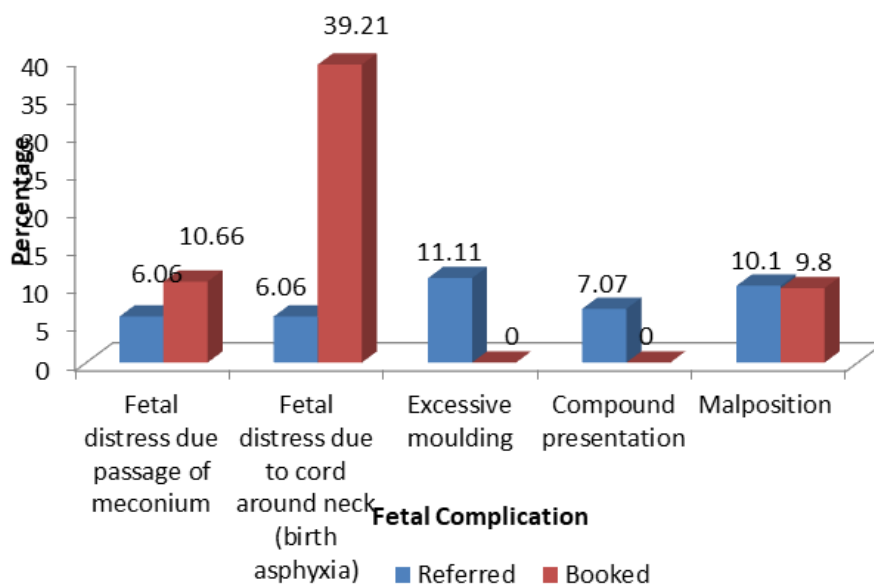
In referred cases, 38 cases (38.38%) were of gestational hypertension, 8 cases

(8.08%) were of thyroid disorder, 4 cases (4.04%) were of gestational diabetes mellitus, 10 cases (10.10%) were of anemia, 7 cases (7.07%) were of deranged LFT.

In Booked cases, 4 cases (7.84%) were of gestational hypertension, 5 cases (9.80%) were of thyroid disorder, 4 cases (7.84%) were of anemia, 3 cases (5.88%) were of deranged LFT.



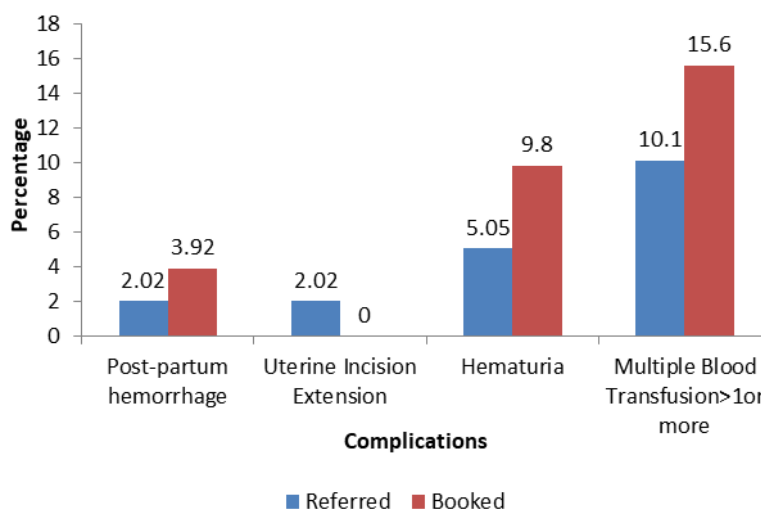
Out of total 150 cases, 49 cases (32.66%) were of labour dystocia, 12 cases (8.00%) were of undiagnosed CPD, 8 cases (5.33%) had bandl's ring. In referred cases, 39 cases (39.39%) were of labour dystocia, 12 cases (12.12%) were of undiagnosed CPD, 8 cases (8.08%) had bandl's ring. In booked cases, 10 cases (19.60%) were of labour dystocia and most importantly none of the booked cases had undiagnosed CPD or bandl's ring.



There were total 150 cases, 22 cases (14.66%) were of fetal distress due to passage of meconium, 26 cases (17.33%) were of fetal distress due to cord around neck, 11 cases (7.33%) were of excessive moulding, 7 cases (4.66%) were of compound presentation, 15 cases (10.00%) were of malposition. In referred cases, 6

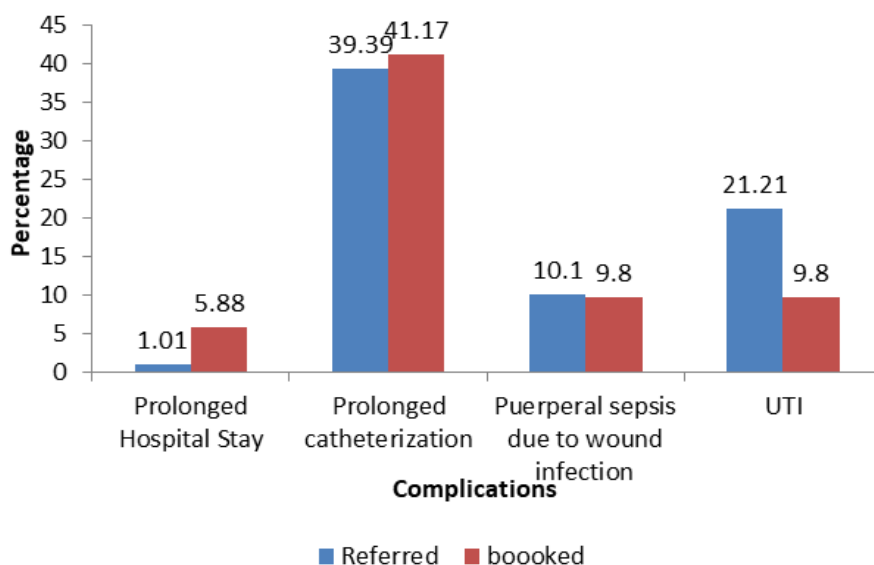
cases (6.06%) were of fetal distress due to passage of meconium, 6 cases (6.06%) were of fetal distress due to cord around neck, 11 cases (11.11%) were of excessive moulding, 7 cases (7.07%) were of compound presentation, 10 cases (10.10%) were of malposition. In Booked cases, 16 cases (10.66%) were of fetal distress due

to passage of meconium, 20 cases (39.21%) were of fetal distress due to cord around neck, 5 cases (9.80%) were of malposition.



In 150 cases, 4 cases (2.67%) had postpartum haemorrhage, 2 cases (1.33%) had uterine incision extension, 10 cases (6.67%) had hematuria, 18 cases (12.00%) had multiple blood transfusion >1 or more. In referred cases, 2 cases (2.02%) had postpartum haemorrhage, 2 cases (2.02%) had uterine incision extension, 5 cases

(5.05%) had hematuria, 10 cases (10.10%) had multiple blood transfusion >1 or more. In booked cases, 2 cases (3.92%) had postpartum haemorrhage, 5 cases (9.80%) had hematuria, 8 cases (15.6%) had multiple blood transfusion >1 or more.



Out of total 150 cases, 4 cases (2.66%) had prolonged hospital stay, 60 cases (40.00%) had prolonged catheterization, 15 cases (10.00%) had puerperal sepsis due to

wound infection, 26 cases (17.33%) had UTI. In referred cases, 1 case (1.01%) had prolonged hospital stay, 39 cases (39.39%) had prolonged catheterization, 10 cases

(10.00%) had puerperal sepsis due to wound infection, 21 cases (21.21%) had UTI. In booked cases, 3 cases (5.88%) had prolonged hospital stay, 21 cases (41.17%) had prolonged catheterization, 5 cases

(9.80%) had puerperal sepsis due to wound infection, 5 cases (9.80%) had UTI.

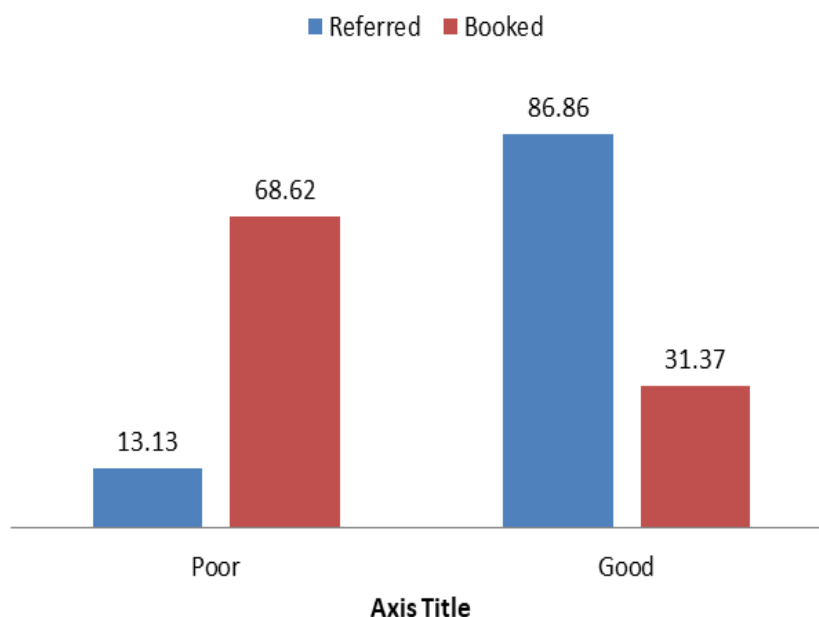
Table 4 : Incidence of term and preterm babies

Term	Referred (n=99)		Booked (n=51)		Total	
	No. of cases	%age	No. of cases	%age	No. of cases	%age
Term	90	90.90	51	100	141	94
Preterm	9	9.09	0	0.00	9	6

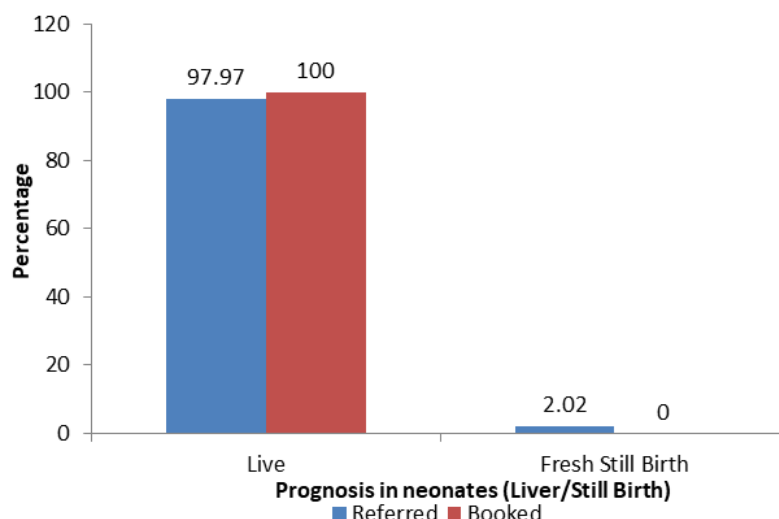
Table 4, showing distribution according to incidence of term and preterm babies: There were total 150 cases, 141 cases (94%) had term babies, 9 cases (6.00%) had preterm babies.

In referred cases, 90 cases (90.90%) had term babies, 9 cases (9.09%) had preterm babies.

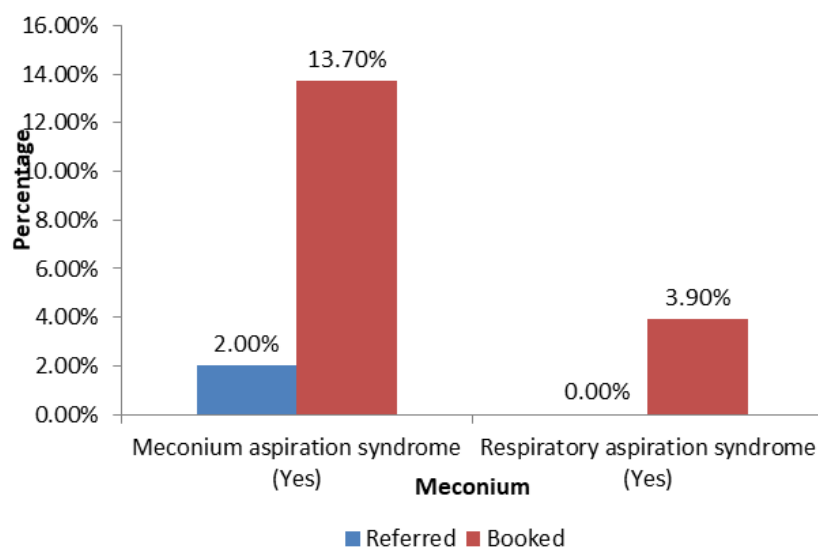
In booked cases, 51 cases (100%) had term babies.



There are total 150 cases, 48 cases (32%) had poor APGAR score and 102 cases (68%) had good APGAR score. In referred cases, 13 cases (13.13%) had poor APGAR score and 86 cases (86.86%) had good APGAR score. In booked cases, 35 cases (68.62%) had poor APGAR score and 16 cases (31.37%) had good APGAR score.



There were total 150 cases, 148 cases (98.67%) had alive babies, whereas 2 cases (1.33%) had fresh still birth. In referred cases, 97 cases (97.97%) had alive babies, 2 cases (2.02%) had fresh still birth. In Booked cases, 51 cases (100%) had alive babies and no still births in booked cases which again is very important finding.



There are total 150 cases, 9 cases (6.00%) had meconium aspiration syndrome. In referred patient, 2 cases (2.02%) had meconium aspiration syndrome. In booked cases, 7 cases (13.72%) had meconium aspiration syndrome. Out of total 150 cases, 2 cases (1.33%) had respiratory distress syndrome. In booked cases, only 2 cases (3.92%) had respiratory distress syndrome.

Table 5: Incidence of nicu admission

Complication in neonates	Referred (n=99)		Booked (n=51)		Total (NICU admission)	
	No. of cases	%age	No. of cases	%age	No. of cases	%age
Bag and Mask						
• Yes	11	11.11	30	58.82	41	27.33

Intubation						
• Yes	2	2.02	5	9.80	7	4.66

Table 5, showing incidence of NICU admission.

Total NICU admissions were 48 (32.00%), out of which, 41 cases (27.33%) had bag and mask, 7 cases (4.66%) were intubated.

In referred cases, 11 cases (11.11%) had bag and mask, 2 cases (2.02%) were intubated.

In booked 30 cases (58.82%) had bag and mask, 5 cases (9.80%) were intubated

Discussion

In our prospective cross sectional study from March 2020 to May 2021, 150 patients, who underwent cesarean section during second stage of labour were selected according to exclusion and inclusion criteria. We observed, that out of these 150 patients, 60 patients (40%) belonged to the age group 21- 25 years, which is comparable to the study done by Sinha A et al [10] in 2017 where majority belonged to age group of 21-25 years old which was 48.24%.

In our study, 133 patients were primigravida (88.66%). More Primigravidas underwent cesarean section in second stage of labour, which could be due to rigid perineum, mild to moderate CPD. Similar result was seen in the study done by Gupta K and Garg A [11] in 2019, where 81% of primigravida underwent cesarean section in second stage of labour.

In our study, out of 150 patients, 99 patients (66%) were referred. Due to poor health care facilities, delay in referral system, large majority of patients reaches hospital too late with features of obstructed labour with more complications. Similar to the study done by Bhargava S et al [12] in 2019, where 60% of patients were referred from outside in advanced labour.

In our study most common indication for cesarean section during second stage of labour was labour dystocia in second stage of labour seen in 49 patients (32.66%) followed by fetal distress due to cord around neck seen in 26 patients (17.33%). Labour dystocia can be reduced by judicious use of oxytocin and close monitoring of progression of labour with the help of partograph. In contrast to the study done by Asıcıoglu O et al [13] in 2014, in which labour dystocia in second stage of labour was seen in 76.7% followed by fetal distress in 8.3%.

Several maternal and fetal complications due to prolonged second stage of labour were observed in our study. Complications such as PPH was seen in 4 cases (2.67%) due to long standing labour and uterine atonicity. In contrast to the study done by Gupta K and Garg A [11] in 2019, where PPH was seen in 35% and a study done by Sinha A et al [10] in 2017, 17.54% PPH was seen. Multiple blood transfusion (>1 or more) required during cesarean section done in second stage of labour. In the present study 18 patients (12%) required multiple blood transfusions intra-operatively. In contrast to study done by Gupta K and Garg A [11] in 2019 where blood transfusion was seen in 8% cases.

Due to edematous lower uterine segment, deep impacted head, it becomes difficult to identify lower uterine segment and bladder, which increase the chances of bladder injury during cesarean section. In our study 10 patients (6.67%) had hematuria due to bladder injury, uterine incision extension seen in 2 patients (1.33%) because of difficult extraction of presenting part, in contrast to the study done by Gupta K and Garg A [11] in 2019, where 41% had hematuria and 28% had uterine incision extension

In our study most common maternal complication seen, was prolonged

catheterization in 60 patients (40%), followed by UTI seen 26 patients (17.33%). In contrast to the study done by Gupta K and Garg A [11] in 2019 where hematuria (41%) was most common maternal complication followed by uterine atonicity (35%). [14]

In our study, Poor APGAR score at 5 min seen in 48 patients (32.00%), similar to the study done by Fantu S et al [14] in 2010 in which 45.8% had low APGAR score

In our study 2 fresh still births (1.33%) were seen, similarly in a study done by Gupta K and Garg A [11] in 2019, where 1% still birth was present. [15]

Conclusion

In our study 150 women, who underwent cesarean section during second stage of labour, were selected according to exclusion and inclusion criteria. It was observed that labour dystocia was most common indication seen in our patients followed by fetal distress. This concludes that judicious use of oxytocics and careful monitoring of progress of labour with the help of partograph could help in decreasing the number of cesarean section in second stage of labour. Majority of them were referred patients, and from rural background who did not have proper antenatal checkup. This implies good antenatal checkup and recognition of complications can reduce the risk of prolonged second stage of labour. Timely decision for cesarean section and neonatal facilities can reduce the number of fetal complications. Our study concludes that, proper antenatal checkup which entails pelvic assessment and assessment of fetal birth weight, easy access to healthcare facility, vigilant monitoring and efficient referral system at primary and secondary level can decrease the rate of cesarean section in second stage of labour.

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