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STUDY OF NORMAL DELIVERY AND ITS MATERNAL AND FETAL OUTCOMES IN A TERTIARY CARE HOSPITAL

Shraddha Temurkar[1]* and S. R. Wakode[2]

[1]Junior Resident 3, Department of Obstetrics and Gynecology DR S. C. G. M. C. Nanded, Maharashtra.
[2]Professor & Head of department, Department of Obstetrics and Gynecology DR S.C.G.M.C Nanded, Maharashtra.

***Corresponding Author: Dr. Shraddha Temurkar**

Junior Resident 3, Department of Obstetrics and Gynecology DR S. C. G. M. C. Nanded, Maharashtra.

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ABSTRACT

Background: Normal delivery is safest for the fetus and the mother, when the newborn is full-term at the gestational age of 37 to 42 weeks. Vaginal delivery is preferred considering the morbidity and mortality associated with operative caesarean births has increased over time. **Aims & objectives:** To study the maternal & fetal outcomes in normal delivery & also to study the complications of normal delivery. **Methods:** A cross-sectional study in tertiary care centre of 546 antenatal women was conducted. Patient were evaluated with respect to age, education, gravida, socioeconomic status, current delivery details, such as the onset of labor, duration of labor, use of medications, and delivery outcomes, were documented meticulously. Maternal outcomes, including postpartum haemorrhage, perineal tears, and other complications, were recorded immediately and within 42 days post-delivery. Similarly, fetal outcomes, such as 81 Apgar scores at 1 and 5 minutes, the need for neonatal resuscitation, neonatal morbidity, and mortality within 28 days post-delivery, were also noted. **Results:** Majority 474 cases or 85.8%, did not experience any complications but the most common early complications were urinary retention, reported in 15 cases (2.8%), and postpartum haemorrhage (PPH), occurring in 14 cases (2.6%). The most common late complication was dyspareunia, affecting 28 cases (5.2%) of the total. Puerperal sepsis was reported in 5 cases (1%), while both breast engorgement and breast abscess were noted in 7 cases each, representing 1.3% each. The birth weight shows that a small fraction of newborns, specifically 3 cases or 0.6%, weighed less than 2 kg. Most of the newborns, accounting for 277 cases or 51.2%, had a birth weight between 2-2.5 kg. Additionally, 266 newborns, representing 48.2%, weighed more than 2.5 kg. **Conclusion:** Everyone thinks normal delivery is very easy and is not associated with any complications but every delivery is unique and need special attention for its better outcome. In most of the cases normal delivery is safe and has good maternal and fetal outcomes but in some cases it is associated with many complications and can affects her quality of life.

KEYWORD:- PPH, APGAR SCORE, MORTALITY, MORBIDITY.

INTRODUCTION

Normal delivery is safest for the fetus and the mother, when the newborn is full-term at the gestational age of 37 to 42 weeks. Vaginal delivery is preferred considering the morbidity and the mortality associated with operative caesarean births has increased over time.[1]

Approximately 80% of all singleton vaginal deliveries are at full term via spontaneous labour, where as 11% are preterm, and 10% are post term.[2] Normal delivery refers to the natural process of childbirth, typically resulting in less recovery time and lower risk of complications than caesarean sections. However, the outcomes for both mother and child can vary based on a multitude of factors, including the care provided at tertiary hospitals.[3] Within Maharashtra, a study conducted in a tertiary care hospital in Pune found significant challenges related to maternal and neonatal health. It noted high rates of obstetric complications and a relatively high prevalence of emergency caesarean sections, which were often performed due to delayed 5 referrals or inadequate management at peripheral centres. This highlights the critical need for improving antenatal care and optimizing obstetric management to enhance maternal and fetal outcomes in the region.[4] The pattern of obstetrical emergencies and their management in tertiary care centres underscores the necessity of studying these outcomes. These emergencies often involve conditions like pregnancy-induced hypertension and obstructed labor, which significantly affect maternal and fetal health.[5]

So many researchers are studying in new and more complicated type of topics but we preferred to research

on very popular and most common topic that is normal vaginal delivery cases. It is a assumption of all, that normal delivery is not having any complication or problem but in actual practice it is observed that either mother or newborn may suffer from few morbidities. Majority of the patients and relatives demanded for normal vaginal delivery rather than C-section, so there is a need to study properly about normal vaginal delivery. So present study is aimed to study about maternal and fetal outcomes in an unplanned emergency vaginal delivery.

MATERIAL AND METHODS

A cross-sectional study was carried out in the Obstetrics and Gynaecology department of a tertiary care hospital over a period of eighteen months from October 2022 to April 2024 included all pregnant women who delivered at the tertiary care hospital during the study period**.**

Inclusion criteria

- Women aged 18-45 years.
- Women who indicating normal delivery in active labour.
- Women with singleton pregnancies.
- Women who consented to participate in the study.

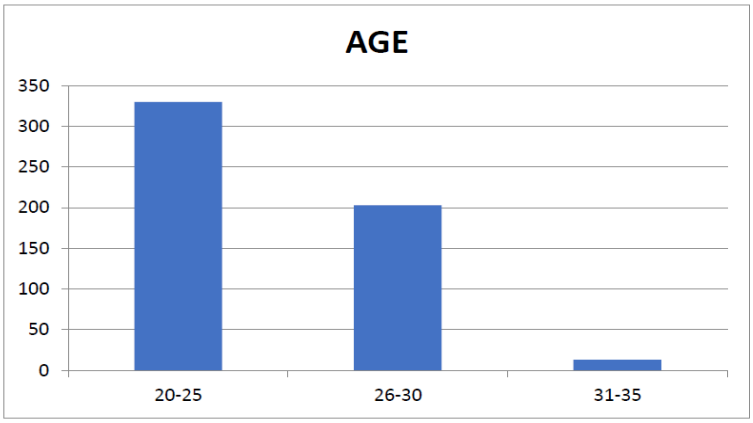
Exclusion criteria

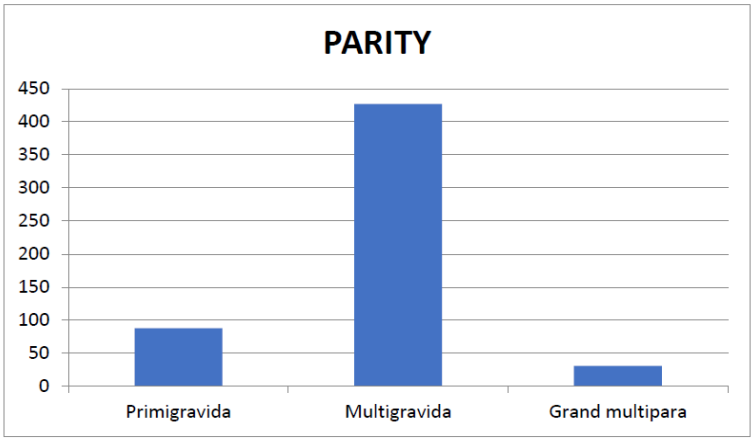
- Women with a history of caesarean section.
- Women with multiple gestations, breech presentation, preterm labour.
- Women with pre-existing medical conditions such as diabetes or hypertension.
- Women who required instrumental delivery.
- All patients with induced labor, comorbidities, with preeclampsia and other placental disorders.

RESULTS AND DISCUSSION

Distribution of patients	Age	No of cases	Percentage
	20-25	330	60%
	26-30	203	38%
	31-35	13	2%

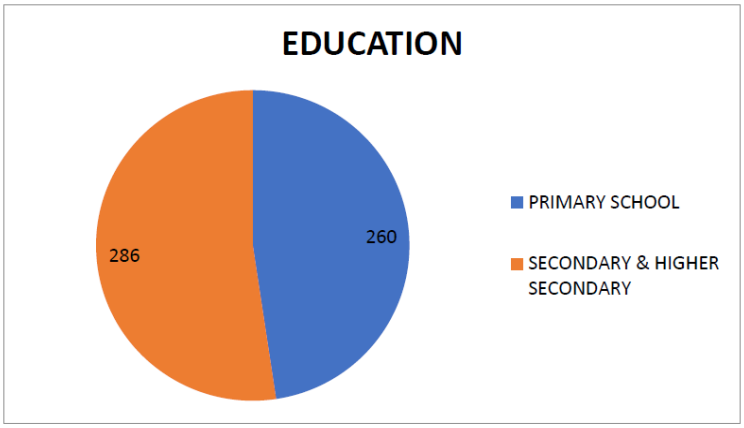
Distribution of patients	Parity	No of cases	Percentage
	Primigravida	88	16%
	Multigravida	427	78%
	Grandmultipara	31	6%



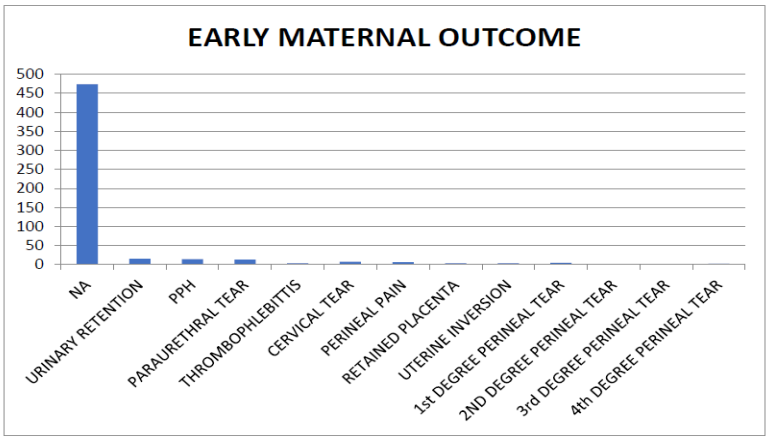


Educational status

Education	No of cases	Percentage
Primary School	260	48%
Secondary & Higher secondary	286	52%
Total	546	100%



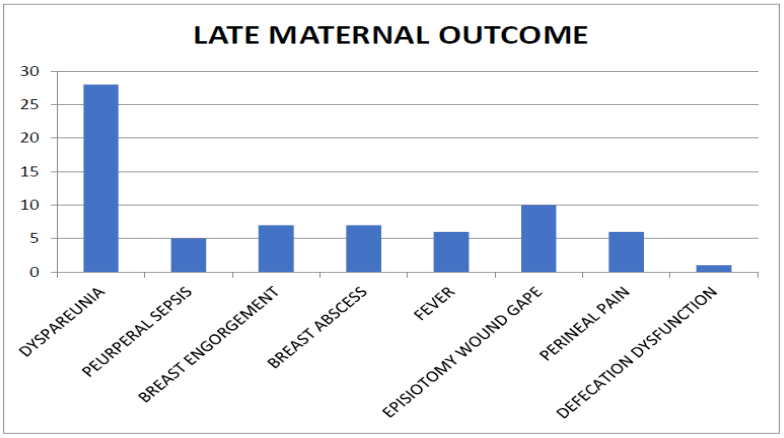
Maternal outcome		
Early	**Frequency**	**Percentage**
Na	474	85.8%
Urinary retention	15	2.8%
Pph	14	2.6%
Paraurethral tear	13	2.4%
Thrombophlebittis	3	0.5%
Cervical tear	7	1.3%
Perineal pain	6	0.9%
Retained placenta	3	0.5%
Uterine inversion	3	0.5%
1st degree perineal tear	4	0.73%
2nd degree perineal tear	1	0.2%
3rd degree perineal tear	1	0.2%
4th degree perineal tear	2	0.4%



Late Maternal Outcomes (>72 Hours)

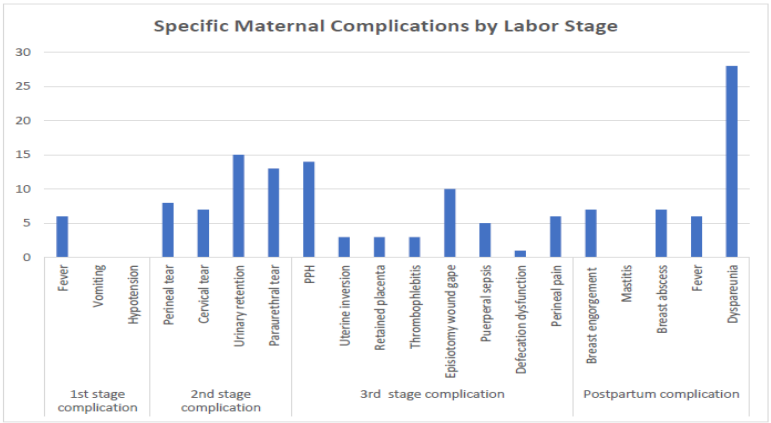
Maternal outcome		
Late (>72 hours)	**Frequency**	**Percentage**
Dyspareunia	28	5.2%
Peurperal sepsis	5	1%
Breast engorgement	7	1.3%

Breast abscess	7	1.3%
Fever	6	1.1%
Episiotomy wound gape	10	2%
Perineal pain	6	1.1%
Defecation Dysfunction	1	0.2%



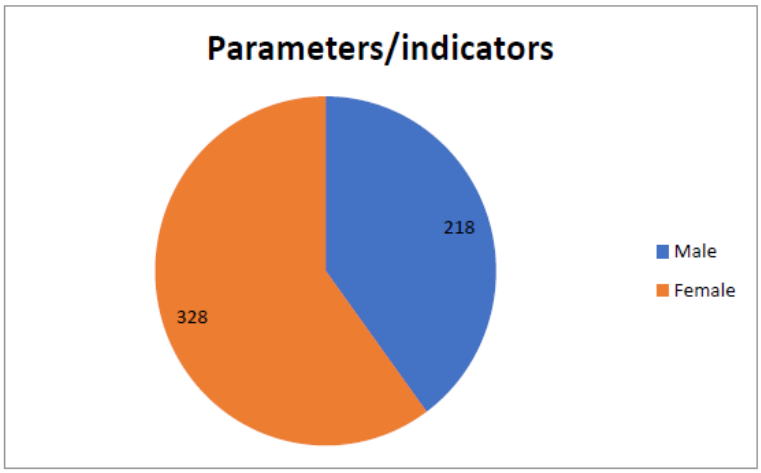
Specific maternal complications by labor stage

Stages	Parameters/indicators	no of cases	Percentage
1st stage complication	Fever	6	1.1%
	Vomiting	0	0%
	Hypotension	0	0%
2nd stage complication	Perineal tear	8	1.46%
	Cervical tear	7	1.3%
	Urinary retention	15	2.8%
	Paraurethral tear	13	2.4%
3rd stage complication	PPH	14	2.6%
	Uterine inversion	3	0.5%
	Retained placenta	3	0.5%
	Thrombophlebitis	3	0.5%
Postpartum complications	Episiotomy wound gape	10	2%
	Puerperal sepsis	5	1%
	Defecation dysfunction	1	0.18%
	Perineal pain	6	1.1%
	Breast engorgement	7	1.3%
	Mastitis	0	0%
	Breast abscess	7	1.3%
	Fever	6	1.1%
	Dyspareunia	28	5.2%



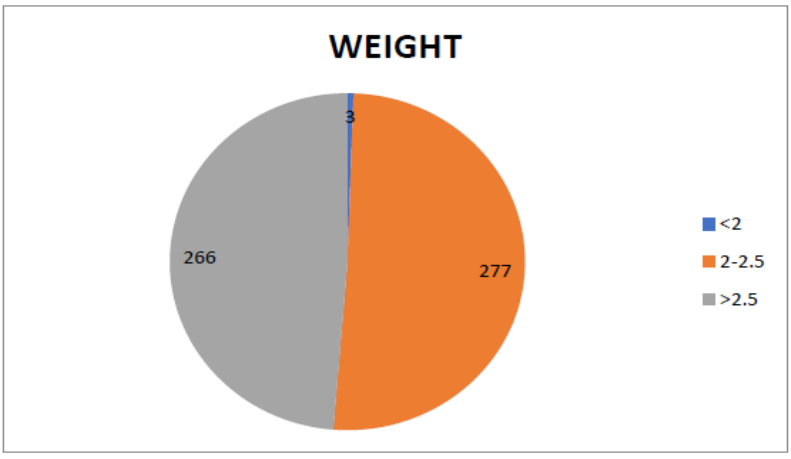
Gender distribution of newborns

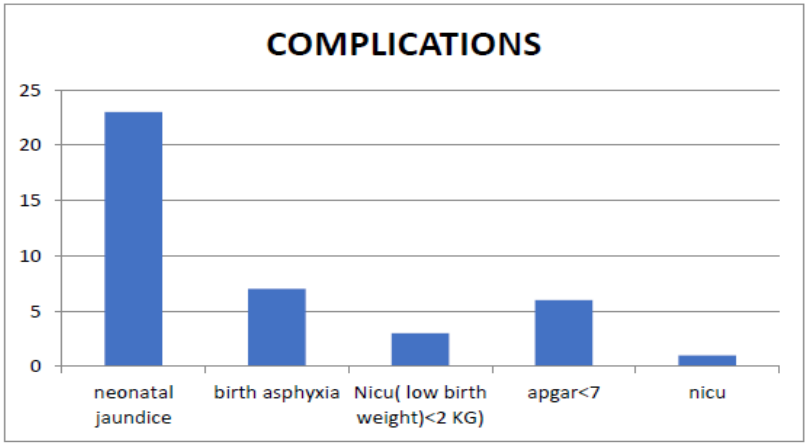
Parameters/indicators	No of cases	Percentage
Male	218	40%
Female	328	60%
Total	546	100%



Fetal Outcome by Birth Weight (cross tabulate with fetal complications)

Fetal outcome			
Study veriables		Frequency	Percentage
Weight	<2	3	0.6%
	2-2.5	277	51.2%
	>2.5	266	48.2%
Complications	Neonatal jaundice	23	4.3%
	Birth asphyxia	7	1.3%
	Nicu (low birth Weight) <2 kg)	3	0.6%
	Apgar<7	6	0.2%
	Nicu	1	0.2%





DISCUSSION

Age-Parity

The age-parity distribution of the patients in this study indicates that the majority of the women are young, with most patients (60%) aged between 20-25 years, followed by 38% in the 26-30 years range, and only 2% aged 31-35 years. With ROL as per age is concern for delivery, safe age is from 22-30 years as this may be related with the complete growth of pelvis and long bones of females. Pregnancy below or equal to 19 years which are called as teenage pregnancy is associated with many complications like anaemia, preeclampsia, perineal tears and increased operative delivery due to CPD and contracted pelvis. Similarly pregnancies and labor after 30 years of age is called elderly primigravida may be associated with comorbidities and increase chances of down's syndrome, diabetes and hypertension etc. It is observed that majority of the patient safely delivered normally except 2% (8 cases) had perineal tear.

When examining parity, a significant majority (78%) were multigravida, which means they had been pregnant more than once, and 16% were primigravida, experiencing their first pregnancy. The presence of grand multipara patients (6%) further highlights the prevalence of high-parity pregnancies.

In primigravidas previously labour was not tested so they had more complications perineal tear (1%)8 cases followed by cervical tear (1%)7 cases. In grand multipara 5 cases (0.9%) were associated with complications like PPH due to atonicity of uterus. In comparison, Adelaja and Taiwo6 (2011) found that high parity was a common factor among patients presenting with obstetric emergencies, which was linked to increased risks of maternal morbidity and mortality.

Education status

In this study, 48% of participants had only completed primary school education, while 52% had achieved secondary or higher secondary education. The association between educational level and health outcomes is well-documented. Studies like those conducted by Jakhar and Choudhary7 (2019) have demonstrated that women with higher education levels are more likely to access prenatal care, understand the importance of regular check-ups, and seek timely medical help when complications arise.[8]

Newborn-Gender

The gender distribution of newborns in this study reveals a higher proportion of female births, with 60% of the newborns being female compared to 40% male. This finding diverges from the expected natural birth sex ratio, which is typically closer to an equal distribution or slightly higher for males.

Common early maternal complications

1. Urinary Retention (2.8%): Urinary retention was the most common complication, affecting 15 cases. This condition can result from trauma to the pelvic nerves or muscles during childbirth, particularly after prolonged labor, perineal trauma or due to pain reflex. Effective management includes prompt catheterization to relieve discomfort and prevent complications such as urinary tract infections. Jakhar and Choudhary7. (2019) noted similar occurrences of urinary retention in their study, highlighting the need for regular monitoring of bladder function post-delivery.[8]

2. Postpartum Hemorrhage (PPH) (2.6%): PPH, which was reported in 14 cases, is a serious condition characterized by excessive bleeding after childbirth. It is a leading cause of maternal mortality and morbidity worldwide. Management strategies include the use of uterotonics, uterine massage, and, if necessary, surgical interventions. Adelaja and Taiwo6. (2011) emphasized the critical need for immediate and effective management of PPH to prevent severe outcomes, suggesting that well-prepared healthcare teams can significantly reduce the risks associated with PPH.[9]

3. Paraurethral Tear (2.4%): Paraurethral tears, occurring in 13 cases, can result from the stress and stretching of tissues during delivery. These tears require careful repair to prevent ongoing pain,

bleeding, and potential urinary issues. Studies indicate that the occurrence of tears can be minimized with skilled delivery techniques and the appropriate use of episiotomies.

Less common complications

- Thrombophlebitis (0.5%): This condition, involving inflammation of the veins with blood clot formation, was observed in 3 cases. Thrombophlebitis can lead to more measures include early mobilization and the use of compression devices.
- Cervical Tear (1.1%): Cervical tears were seen in 7 cases, indicating the need for careful monitoring during labor to prevent cervical trauma, especially in women with rapid labor progression or those with previous cervical surgery.
- Perineal Pain (0.9%): Reported by 6 cases, perineal pain is common after childbirth, especially following episiotomy or tearing. Effective pain management, including the use of analgesics and proper wound care, is essential for recovery.

Rare complications

Retained Placenta and Uterine Inversion (0.6% each): Each of these complications was observed in 3 cases. Retained placenta can cause significant bleeding and requires manual removal. Uterine inversion, although rare, is a life-threatening condition requiring immediate repositioning of the uterus and supportive care.

Perineal Tears of Various Degrees: First-degree tears occurred in 3 cases (0.6%), while more severe second, third, and fourth-degree tears were less common, with occurrences of 0.2% and 0.4%, respectively. Management of perineal tears involves careful repair to ensure proper healing and minimize the risk of infection or longterm dysfunction.

Common late maternal complications

1. Dyspareunia (5.2%): Dyspareunia, or painful intercourse, was the most common late complication, affecting 28 cases. This condition can result from perineal trauma during childbirth, such as tears or episiotomies, or from other factors like vaginal dryness or infections. Dyspareunia can significantly impact a woman's quality of life and counselling. Jakhar and Choudhary7. (2019) noted that dyspareunia is a common issue among postpartum women, particularly those who experienced significant perineal trauma.[8]

2. Puerperal Sepsis (1%): Puerperal sepsis was reported in 5 cases, highlighting the risk of infection following childbirth. Puerperal sepsis can result from bacterial infections of the uterus, often related to prolonged labor, manual removal of the placenta, or poor hygiene. Early detection and treatment with antibiotics are essential to prevent severe outcomes. Adelaja and Taiwo6. (2011) found that puerperal sepsis was a significant cause of maternal morbidity, particularly among women who did not receive adequate antenatal care.[9]

3. Breast Engorgement and Breast Abscess (1.3% each): Both breast engorgement and breast abscess were observed in 7 cases each. These conditions are common postpartum complications, especially among breastfeeding mothers. Engorgement occurs when the breasts are over full of milk, leading to pain and swelling, and can progress to mastitis or abscess if not managed. Treatment includes regular breastfeeding or milk expression, pain relief, and antibiotics for abscesses. Gupta et al 10. (2016) emphasized the importance of breastfeeding support and education to help mothers manage these conditions effectively.

Other late complications

- Fever (1.1%): Fever was reported in 6 cases, which may indicate underlying infections, such as urinary tract infections or mastitis. Prompt evaluation and treatment are necessary to identify the cause of fever and prevent further complications.
- Episiotomy Wound Gape (2%): Episiotomy wound gape occurred in 10 cases, highlighting issues with wound healing. Proper wound care, hygiene, and monitoring for signs of infection are essential to promote healing and prevent complications.
- Perineal Pain (1.1%): Perineal pain was reported in 6 cases, reflecting discomfort related to perineal trauma or episiotomy. Management includes pain relief, sitz baths, and proper hygiene.
- Defecation Dysfunction (0.2%): There was one instance of defecation dysfunction, which can occur due to pelvic floor trauma or nerve damage during childbirth. This condition may require specialized care, including pelvic floor therapy.

Fetal outcomes

The fetal outcomes categorized by birth weight and associated complications provide valuable insights into the health and well-being of newborns. The data indicate that the majority of newborns had a birth weight between 2-2.5 kg (51.2%) or greater than 2.5 kg (48.2%), with only a small fraction (0.6%) weighing less than 2 kg. The birth weight distribution is an important indicator of neonatal health, as low birth weight is associated with increased risks of complications and adverse outcomes.

Birth weight distribution

- Normal and Low Birth Weight: The majority of newborns fell within the normal birth weight category (greater than 2.5 kg), which is associated with better neonatal outcomes and lower risks of complications. However, 51.2% of the newborns had a birth weight between 2-2.5 kg, indicating a relatively high prevalence of low birth weight. Low birth weight can result from factors such as prematurity, maternal malnutrition, and intrauterine growth restriction (IUGR). These infants are at

higher risk for complications such as respiratory distress, feeding difficulties, and infections. The small proportion of very low birth weight infants (<2 kg) highlights the need for targeted interventions to support maternal nutrition and prenatal care.

Neonatal complications

1. Neonatal Jaundice (4.3%): Neonatal jaundice was the most common complication, affecting 23 newborns. Jaundice is often related to immature liver function, which is more common in low birth weight and preterm infants. Early detection and the risk of kernicterus. Jakhar and Choudhary7. (2019) reported similar findings, emphasizing the importance of monitoring bilirubin levels in newborns, especially those with low birth weight.[8]

2. Birth Asphyxia (1.3%): Birth asphyxia was observed in 7 cases, indicating that a small proportion of newborns experienced oxygen deprivation during birth. Asphyxia is a critical condition that requires immediate resuscitation to prevent brain injury and long-term neurological deficits. The presence of birth asphyxia in this study underscores the need for continuous fetal monitoring during labor to detect signs of fetal distress and intervene promptly. Adelaja and Taiwo6. (2011) highlighted the importance of skilled birth attendants in recognizing and managing birth asphyxia to improve neonatal outcomes.[9]

3. NICU Admissions (0.6% for LBW and 0.2% for other reasons): There were 3 cases of NICU admission due to low birth weight (<2 kg) and an additional NICU admission for reasons other than low birth weight. NICU care is critical for managing high-risk infants who require specialized support, such as respiratory assistance, temperature regulation, and intensive monitoring. Gupta et al10. (2016) emphasized that NICU admissions are more common among low birth weight infants due to their vulnerability to complications, reinforcing the need for specialized neonatal care facilities.

4. Apgar Score <7 (0.2%): Only one case had an Apgar score of less than 7, indicating moderate distress at birth. This low incidence suggests that most newborns were delivered in good condition, with effective perinatal care and immediate intervention to address any signs of distress. Low Apgar scores are often associated with preterm practices.

The foetal outcomes by birth weight and associated complications emphasize the importance of comprehensive prenatal care, skilled labour management, and effective neonatal care. While most newborns had favourable outcomes, the presence of low birth weight and associated complications such as jaundice and asphyxia indicate the need for targeted interventions to support maternal and neonatal health. Improving maternal nutrition, ensuring regular antenatal visits, and providing access to specialized neonatal care can help reduce the risks of low birth weight and associated complications, leading to better outcomes for newborns.

With our experience skill is required more for conducting normal vaginal delivery rather than C – section. Normal delivery is a blind procedure with anticipation of CPD, deep transverse arrest, PPH etc. In C-section everything is obvious, delivery of a baby is easy as compared to normal delivery.

Why Normal delivery is SKILLFULL? 1) Obstetrician should be experienced 2) Complete examination should be done by self 3) He should find out fetal size, should done clinical pelvimetry 4) As it is a journey of 12-14 hrs in primigravidas and 6-8 hrs in multigravidas so all anticipations should be made already to make this journey safe in a blind pouch that is soft and hard passages that's why normal delivery is more skillfull. 5) 3 levels should work properly for normal delivery- power, passage and passenger otherwise it my become difficult to deliver hence skillfull.

Is maternal and fetal outcome is always safe in normal delivery?

To find the answer of this question, the present study is conducted.

As per the criteria of normal delivery all cases were selected and observed the outcomes according to which labour should spontaneous in onset, full term, remains low risk throughout labour and delivery, natural termination of pregnancy without undue prolongation & both mother and neonate should be in good condition after birth. One of the study conducted by Wakode etal 11(2021), patients were studied on the basis of their choices for mode of delivery. The majority 87% preffered normal vaginal delivery, the reason being early recovery, less complications, shorter hospital stay etc and 13% preffered caesarean section the reason being to avoid pain during course of labour and fear of injury.

CONCLUSION

Everyone thinks normal delivery is very easy and is not associated with any complications but every delivery is unique and need special attention for its better outcome. In most of the cases normal delivery is safe and has good maternal and fetal outcomes but in some cases it is associated with many complications and can affects her quality of life. It may affect patients life in such a way that it affects her daily routine, her sexual life, social life and finally land up in to social embarrassment. Therefore each and every delivery needs vigilance to get good outcomes and also to prevent its complications.

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