



Original Research Article

Frequency of Fetomaternal Outcome of Obstructed Labour in Multigravida Patients Referred to Tertiary Care Hospital after Trial of Labour

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Abstract: **Objective:** To determine the frequency of fetomaternal outcome of obstructed labour in multigravida patients referred to tertiary care hospital after trial of labour. **Study Design:** Descriptive cross-sectional study. **Place and Duration of Study:** Conducted from 15th May 2025 to 15th November 2025 at the Department of Obstetrics and Gynaecology, Mardan Medical Complex, Mardan. **Methodology:** A total of 197 multigravida women aged 18–40 years with singleton pregnancies beyond 36 weeks of gestation referred after trial of labour and diagnosed with obstructed labour were included. Outcomes included mode of delivery, postpartum hemorrhage, low Apgar score at five minutes, meconium-stained liquor, intrauterine fetal death, and admission to the neonatal intensive care unit. Data were analyzed using SPSS 26. Chi-square test and Fisher exact test were applied after stratification, with a p-value of 0.05 or less considered statistically significant. **Results:** Cesarean section was performed in 124 (62.90%) patients. Postpartum hemorrhage occurred in 44 (22.30%) cases. Low Apgar score was observed in 92 (46.70%) newborns, while meconium-stained liquor was present in 91 (46.20%) cases. Intrauterine fetal death was recorded in 6 (3.00%) patients. Admission to the neonatal intensive care unit was required for 46 (23.40%) neonates. **Conclusion:** Obstructed labour in multigravida patients referred after trial of labour is associated with a high frequency of adverse maternal and fetal outcomes.

Keywords: Cesarean Section; Fetal Outcome; Maternal Outcome; Obstructed Labor; Parturition; Referral and Consultation.

INTRODUCTION

Trial of labor is often attempted in multigravida women since they possess previous histories of vaginal delivery or labor progress, and it is often presumed that the cervix and pelvis would be adequate for a subsequent vaginal delivery, although not in many pregnancies.¹ In the context of a big hospital or tertiary care setting, multigravida patients often get referred for trial of labor in peripheral institutions after labor onset, where labor observation could be poor, timing for referral might be delayed, or labor could continue for many hours with little or no progress monitored.² During trial of labor in such women, assessment of uterine contractions, cervical dilatation, fetal heart rate, or descent of the presenting part often takes place, but if obstruction occur it could remain unnoticed.³

Multigravida women could still develop obstructed labor due to mispositioning, malpresentation, cephalopelvic disproportion in current gestation, large baby, or pelvis, or on account of wrong application of oxytocin, dehydration or fatigue.⁴ Fetomaternal outcomes in obstructed labor trial of labor cases are generally adverse, and cesarean sections become frequent since delivery by the vagina is not safer despite obstruction established, cervix not fully dilated, or presence of fetal distress.⁵ A great number of such cases end up with emergency cesarean sections for failure of labor progress, obstruction of labor, as well as suspicion of risk of uterine rupture, especially with prolonged labor and with augmentation of labor.⁶ Operative delivery rate becomes frequent for the mentioned conditions. Maternal complications would include postpartum

hemorrhage, which could occur from uterine atony with prolonged labor, trauma to the genital tract, or retained placenta, of which shock and need for blood transfusion could potentially result.⁷ Uterine rupture or imminent uterine rupture could occur in some multigravidae, as well as infections such as puerperal sepsis, fever, or wound infection from frequent manipulations of the vulva or vagina for patient monitoring or assessment or delivery, or from prolonged rupture of membranes.⁸

Fetal outcomes are also compromised in these instances as a result of decreased perfusion of the placenta with subsequent fetal hypoxia; therefore, low Apgar scores at 1 minute and 5 minutes become more likely, with resuscitation of the newborns at delivery.⁹ Meconium-stained liquor is often related to fetal distress in prolonged labor, with meconium that is so thick as to pose dangers of respiration or meconium aspiration, followed by an enhanced risk of NICU admission.¹⁰ Intrauterine fetal death can occur in severe obstruction that is prolonged, with an absence of continuing fetal heart monitoring prior to delayed intervention, often a serious condition observed with referred patients who present late.¹¹ Additionally, live fetuses can still face possibilities of birth asphyxia, HAI damage risk, septicemia risk in association with prolonged labor or prolonged membrane rupture, or low birth situation that is a candidate for NICU care for oxygen therapy, antibiotics, or observation.¹² In a study by Karim R et al. shown that frequency of cesarean section was 43.54%, postpartum hemorrhage 13.44%, low Apgar score 34.4%, meconium stained liquor 40.86%, intrauterine fetal death 4.83% and NICU admission was 9.67% in obstructed labour in patients referred to tertiary care hospital after trial of labour.¹³

There is a requirement for conducting this study in Mardan, as the number of multigravida women is still referred late to the tertiary care hospital after trial of labor at the rural or peripheral health centers. In this region, the availability of labor monitoring facilities is limited, along with the utilization of partographs, causing more cases of obstructed labor. Conducting this study would enable us to determine the rate of poor fetomaternal outcomes.

METHODOLOGY

This descriptive cross-sectional study was carried out in the Department of Obstetrics and Gynaecology Mardan Medical Complex Mardan over a period from 15th May 2025 to 15th November 2025. The study design was observational and focused on multigravida patients referred to a tertiary care hospital after trial of labour with suspected obstructed labour. Approval for the study was taken from the Ethical Review Committee of the hospital (No. 510/BKMC Dated: 29/05/2024) before starting data collection and the study was conducted according to institutional ethical standards.

The sample size was 197 and was calculated by using WHO sample size software keeping confidence level at 95% margin of error at 3% and expected frequency of intrauterine fetal death as 4.83% in obstructed labour patients referred after trial of labour.¹³ A non-probability consecutive sampling technique was used. Women aged 18 to 40 years with singleton pregnancy confirmed on ultrasound, gestational age more than 36 weeks according to last menstrual period, parity of 2 or more and diagnosed obstructed labour were included. Only those patients were selected who were admitted in labour room after trial of labour outside the hospital by midwife, lady health visitor or doctor in private hospital based on history. Patients having previous cesarean delivery, major cephalopelvic disproportion diagnosed before labour, major fetal anomalies or malpresentations detected antenatally, severe preeclampsia, placental abruption, complete cervical obstruction or cervical scarring preventing trial of labour were excluded from the study. Obstructed labour was taken as failure of descent of presenting part despite strong uterine contractions on clinical examination and trial of labour was considered when labour was attempted with induction or augmentation using prostaglandin, misoprostol or oxytocin.

Written informed consent was taken from all patients or their attendants after explaining the purpose and benefits of the study before inclusion and data collection. Detailed history was taken regarding referral place, duration of labour and management received outside the hospital. General physical examination and obstetrical examination were performed including assessment of uterine contractions, fetal heart rate and cervical findings. All patients were managed according to standard labour and obstetric protocols of the hospital. Patients were followed continuously until delivery and maternal and fetal conditions were monitored throughout labour and immediate postpartum period. Fetomaternal outcomes were recorded after completion of delivery and follow-up. Cesarean section was noted when delivery was performed through abdominal and uterine incision. Postpartum hemorrhage was taken into account if there was blood loss of 1000 ml or more after caesarean section or 500 ml or more after normal delivery in 24 hours, weighing the soaked gauzes/pads and blood clots, with 1 gram equivalent to 1 ml of blood. Low Apgar Score was defined if Apgar Score at 5 minutes was 5 or less. Meconium Stained Liquor was defined if it was observed that the amniotic fluid is green or yellow. Intrauterine Fetal Death was defined if it is confirmed that the fetus is dead before its complete delivery from the mother through absence of fetal heart beats by ultrasonography. NICU admission was defined if the neonate was admitted for fetal distress. Data were entered and analyzed using SPSS version 26. Quantitative variables were presented as mean

with standard deviation. Categorical variables were presented as frequencies and percentages. Fetomaternal outcomes were stratified with respect to age, gestational age, parity, body mass index, profession, socioeconomic status, and residential

status. After stratification, chi square test or Fisher exact test was applied where appropriate, and p value of 0.05 or less was taken as statistically significant.

RESULTS

The study included 197 multigravida patients with obstructed labour who was referred to tertiary care hospital after trial of labour. The mean age of patients were 29.37 ± 6.76 years and mean gestational age was 39.14 ± 1.42 weeks. Average parity was found to be 3.40 ± 1.31 and mean BMI was recorded as 26.44 ± 2.21 kg/m². The mean blood loss during delivery was 730.68 ± 310.37 ml. Regarding residential status, majority of patients 128 (65.0%) belongs to rural areas while 69 (35.0%) was from urban areas. When socioeconomic status was assessed, 97 (49.2%) patients was from poor socioeconomic background, 71 (36.0%) belongs to middle class and only 29 (14.7%) was from rich families (Table 1).

Table 1. Patient Demographics

Demographics	Mean $\pm$ SD
Age (years)	29.37 ± 6.76
Gestational Age (weeks)	39.14 ± 1.42
Parity	3.40 ± 1.31
BMI (kg/m ²)	26.44 ± 2.21
Blood Loss (ml)	730.68 ± 310.37
Residential Status	
Rural n (%)	128 (65.0%)
Urban n (%)	69 (35.0%)
Socioeconomic Status	
Poor n (%)	97 (49.2%)
Middle n (%)	71 (36.0%)
Rich n (%)	29 (14.7%)

The frequency of various fetomaternal outcomes was evaluated in the study population. Cesarean section was performed in 124 (62.90%) cases while 73 (37.10%) patients delivered vaginally. Postpartum hemorrhage was observed in 44 (22.30%) patients whereas 153 (77.70%) patients did not experience this complication. Low Apgar score was recorded in 92 (46.70%) newborns while 105 (53.30%) had normal Apgar scores. Meconium stained liquor was present in 91 (46.20%) cases and absent in 106 (53.80%) cases. Intrauterine fetal death occurred in only 6 (3.00%) cases while 191 (97.00%) babies was born alive. NICU admission was required for 46 (23.40%) neonates whereas 151 (76.60%) did not require intensive care (Table 2).

Table 2. Frequency of Fetomaternal Outcomes of Obstructed Labour in Multigravida Patients

Outcome	Frequency	% age
Cesarean Section		
Yes	124	62.90%
No	73	37.10%
Total	197	100%
Postpartum Hemorrhage		
Yes	44	22.30%
No	153	77.70%
Total	197	100%
Low Apgar Score		
Yes	92	46.70%
No	105	53.30%
Total	197	100%
Meconium Stained Liquor		

Yes	91	46.20%
No	106	53.80%
Total	197	100%
Intrauterine Fetal Death		
Yes	6	3.00%
No	191	97.00%
Total	197	100%
NICU Admission		
Yes	46	23.40%
No	151	76.60%
Total	197	100%

The association between demographic factors and fetomaternal outcomes was analyzed statistically. For age groups, when patients was divided into ≤ 30 years and > 30 years, no significant association was found with cesarean section ($p=0.917$), postpartum hemorrhage ($p=0.514$), low Apgar score ($p=0.768$), meconium stained liquor ($p=0.305$), intrauterine fetal death ($p=0.415$), or NICU admission ($p=0.996$). Similarly, BMI categories (≤ 25 kg/m² vs > 25 kg/m²) showed no significant association with any of the outcomes including cesarean section ($p=0.71$), postpartum hemorrhage ($p=0.379$), low Apgar score ($p=0.277$), meconium stained liquor ($p=0.631$), intrauterine fetal death ($p=0.706$), and NICU admission ($p=0.135$). Residential status whether rural or urban also demonstrated no significant association with cesarean section ($p=0.628$), postpartum hemorrhage ($p=0.569$), low Apgar score ($p=0.816$), meconium stained liquor ($p=0.524$), intrauterine fetal death ($p=0.429$), or NICU admission ($p=0.084$). Likewise, socioeconomic status categorized as poor, middle, or rich showed no significant association with any outcomes: cesarean section ($p=0.772$), postpartum hemorrhage ($p=0.96$), low Apgar score ($p=0.769$), meconium stained liquor ($p=0.252$), intrauterine fetal death ($p=0.669$), and NICU admission ($p=0.468$) (Table 3).

Table 3. Association of Demographic Factors with Fetomaternal Outcomes

Demographic Factors	C/Section		p-value		Postpartum Hemorrhage		p-value	Low Apgar Score		p-value	Meconium Stained Liquor		p-value	Intrauterine Fetal Death		p-value	NICU Admission		p-value
	Yes n(%)	No n(%)			Yes n(%)	No n(%)		Yes n(%)	No n(%)		Yes n(%)	No n(%)		Yes n(%)	No n(%)		Yes n(%)	No n(%)	
Age Group	≤ 30	67 (62.6 %)	40 (37.4 %)	0.917	22 (20.6 %)	85 (79.4 %)	0.514	51 (47.7 %)	56 (52.3 %)	0.768	53 (49.5 %)	54 (50.5 %)	0.305	2 (1.9 %)	105 (98.1 %)	0.415	25 (23.4 %)	82 (76.6 %)	0.996
	> 30	57 (63.3 %)	33 (36.7 %)		22 (24.4 %)	68 (75.6 %)		41 (45.6 %)	49 (54.4 %)		38 (42.2 %)	52 (57.8 %)		4 (4.4 %)	86 (95.6 %)		21 (23.3 %)	69 (76.7 %)	
BMI (Kg/m ²)	≤ 25	51 (61.4 %)	32 (38.6 %)	0.71	16 (19.3 %)	67 (80.7 %)	0.379	35 (42.2 %)	48 (57.8 %)	0.277	40 (48.2 %)	43 (51.8 %)	0.631	2 (2.4 %)	81 (97.6 %)	0.706	15 (18.1 %)	68 (81.9 %)	0.135
	> 25	73 (64.0 %)	41 (36.0 %)		28 (24.6 %)	86 (75.4 %)		57 (50.0 %)	57 (50.0 %)		51 (44.7 %)	63 (55.3 %)		4 (3.5 %)	110 (96.5 %)		31 (27.2 %)	83 (72.8 %)	
Residential Status	Rural	79 (61.7 %)	49 (38.3 %)	0.628	27 (21.1 %)	101 (78.9 %)	0.569	59 (46.1 %)	69 (53.9 %)	0.816	57 (44.5 %)	71 (55.5 %)	0.524	5 (3.9 %)	123 (96.1 %)	0.429	25 (19.5 %)	103 (80.5 %)	0.084
	Urban	45 (65.2 %)	24 (34.8 %)		17 (24.6 %)	52 (75.4 %)		33 (47.8 %)	36 (52.2 %)		34 (49.3 %)	35 (50.7 %)		1 (1.4 %)	68 (98.6 %)		21 (30.4 %)	48 (69.6 %)	
Socioeconomic Status	Poor	59 (60.8 %)	38 (39.2 %)	0.772	21 (21.6 %)	76 (78.4 %)	0.96	45 (46.4 %)	52 (53.6 %)	0.769	39 (40.2 %)	58 (59.8 %)	0.252	3 (3.1 %)	94 (96.9 %)	0.669	19 (19.6 %)	78 (80.4 %)	0.468
	Middle	47 (66.2 %)	24 (33.8 %)		16 (22.5 %)	55 (77.5 %)		35 (49.3 %)	36 (50.7 %)		37 (52.1 %)	34 (47.9 %)		3 (4.2 %)	68 (95.8 %)		19 (26.8 %)	52 (73.2 %)	
	Rich	18 (62.1 %)	11 (37.9 %)		7 (24.1 %)	22 (75.9 %)		12 (41.4 %)	17 (58.6 %)		15 (51.7 %)	14 (48.3 %)		0 (0.0 %)	29 (100.0 %)		8 (27.6 %)	21 (72.4 %)	

*Fischer Exact Test

DISCUSSION

In present research, cesarean section was carried out in 124 (62.90%) cases, which is a significantly high figure. This is because obstructed labor results in failed vaginal delivery, resulting in the need for emergency cesarean section to save both mother and child from any more complications. Due to obstructed labor, there is no path or weak uterine muscle contraction that prevents the descent of the fetus into the birth canal, thereby requiring a surgical procedure for delivery. Postpartum hemorrhage happened in 44 (22.30%) cases of obstructed labor. The reason for postpartum hemorrhage in obstructed labor is that it results in uterine atony or prolonged labor that results in fatigue of uterine muscles. At this point, the blood vessels of the area remain dilated due to reduced uterine contractions, which results in heavy bleeding. Additionally, traumatic delivery is responsible for heavy bleeding among patients who undergo surgical procedure of cesarean section for delivery.

Low Apgar score was recorded in 92 (46.70%) newborns which indicate significant fetal compromise. During obstructed labour, there is compression of umbilical cord and prolonged pressure on fetal head which reduce oxygen supply to fetus. This hypoxic conditions affects neonatal vitality at birth and results in low Apgar scores. Prolonged labour also cause fetal distress due to reduced placental perfusion. Meconium stained liquor was present in 91 (46.20%) cases in present study. The presence of meconium in amniotic fluids is sign of fetal distress and hypoxia. When fetus experience stress and oxygen deprivation during obstructed labour, there is relaxation of anal sphincter and passage of meconium occur in utero. This is body's response to compromised intrauterine environment. NICU admissions was required for 46 (23.40%) neonates which reflect the severity of complications. Babies born after obstructed labour often requires intensive monitoring and management due to birth asphyxia, low Apgar scores, and meconium aspiration. These neonates needs respiratory support, temperature regulation, and treatment for possible infections that may develop due to prolonged rupture of membranes.

The cesarean section rate in present study was 124 (62.90%) which is lower than several studies from region. Suseela et al. 14 reported 100% cesarean section rate in obstructed labour cases, while Rizvi et al. 15 found 84% cesarean rate, KC et al. 16 and Dayal et al. 17 both reported 84% rate, and Qadir et al. 18 documented cesarean section in their study population. The relatively lower rate in current study might be due to inclusion of multigravida patients who may have had successful vaginal deliveries in some cases after trial of labour, whereas other studies included predominantly primigravida patients who are more prone to cephalopelvic disproportion and

mechanical obstruction requiring surgical intervention.¹⁹ Karim et al. 13 reported even lower cesarean rate of 44% in referral cases which suggest that not all obstructed labour cases end in cesarean section when managed appropriately.

Postpartum hemorrhage was observed in 44 (22.30%) patients in current study which is higher compared to some studies but lower than others. Suseela et al. 14 reported 10% PPH rate, Rizvi et al. 15 found 10%, Afridi et al. 20 documented 9%, Dayal et al. 17 reported 9%, and Qadir et al. 18 found 10% PPH rate. However, KC et al. 16 reported much higher rate of 41% PPH and Soomro et al. 21 found 49% PPH in referral cases. The variation in PPH rates can be attributed to differences in duration of obstructed labour before presentation, degree of uterine exhaustion, and timing of intervention. Studies with higher PPH rates like KC et al. 16 and Soomro et al. 21 included patients who was referred after prolonged trial of labour which lead to more uterine atony and trauma.

Low Apgar score was recorded in 92 (46.70%) newborns in present study which is comparable to some studies. Soomro et al. 21 reported 38% low Apgar scores and Karim et al. 13 found 34% low Apgar in their referral cases. These findings is consistent with pathophysiology of obstructed labour where prolonged compression and hypoxia affects neonatal vitality at birth. The similarity in rates across studies suggest that fetal compromise is inevitable consequence of obstructed labour regardless of geographical location or management protocols.

Meconium stained liquor was present in 91 (46.20%) cases in current study which is higher than rates reported by other researchers. Soomro et al. 21 found 33% meconium staining and Karim et al. 13 reported 41% meconium in their study population. The presence of meconium indicates fetal distress and stress response during obstructed labour. Higher rates in present study might be due to longer duration of labour or delayed referral which allowed more time for fetal hypoxia to develop and trigger meconium passage.

Intrauterine fetal death occurred in only 6 (3.00%) cases in present study which is lower than most other studies from region. Suseela et al. 14 reported 6% perinatal mortality with 4% still-birth, while Rizvi et al. 15 found alarming 27% perinatal mortality with 21% still-birth rate. Soomro et al. 21 documented 16% perinatal death, KC et al. 16 reported 22% perinatal mortality, Dayal et al. 17 found 27% perinatal mortality with 21% still-birth, Afridi et al. 20 reported 36% perinatal mortality, and Qadir et al. 18 documented 34% perinatal mortality. The lower rate of fetal death in present study suggest better monitoring and timely intervention in multigravida patients at tertiary care hospital. Studies with higher perinatal mortality rates included more un-booked

cases and patients from rural areas who presented late after prolonged trial of labour at home or primary care facilities.

NICU admission was required for 46 (23.40%) neonates in present study which is lower than KC et al. 16 who reported 34% NICU admission but higher than Karim et al. 13 who found only 10% NICU admission rate. The differences in NICU admission rates reflect varying degrees of neonatal complications and availability of intensive care facilities in different hospitals. Higher rates indicate more severe birth asphyxia and complications requiring specialized care.

The demographic analysis in present study showed no significant association between age, BMI, residential status, socioeconomic status and fetomaternal outcomes. This contrasts with findings of Qamar et al. 22 who found significant differences in outcomes between grand-multipara and multipara patients with higher rates of complications in older grand-multipara women.

There are certain limitations to the current study that need to be mentioned. It is an individual center study that took place in a single tertiary care center, thereby potentially jeopardizing the ability of extrapolating it to other institutions. Also, the current study had a fairly small number of study candidates, which is limited by the timeframe of study. Moreover, it does not include prolonged observation for both mother and infant in order to evaluate for delayed sequelae. It also does not investigate the causes of obstructed labor or the labor duration prior to referral that could potentially provide additional information about the study outcomes.

CONCLUSION

This study has found that in multigravida women who were referred to the tertiary care center with obstructed labor following trial of labor, adverse fetomaternal outcomes were found to have high frequency. Cesarean section was found to be the major means of delivery, and a significant number of women had complications such as postpartum hemorrhage, low Apgar scores, meconium-stained liquor, and admission in NICU. Though intrauterine fetal death was found to be low.

Disclaimer

No disclaimer is available.

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Ethical Approval

Permission for this study was taken from the Ethical Committee. All the works was carried out by following the committee instructions and the Helsinki Declaration rules.

Patients' Consent

Written permissions were taken from all patients before inclusion in the study. Patients were informed that their personal data will remain confidential and they were free to withdraw at any time.

Conflict of Interest

The authors declare that there is no any conflict of interest related to this study.

REFERENCES

1. Kuba K, Kirby MA, Hughes F, Yellon SM. Reassessing the Bishop score in clinical practice for induction of labor leading to vaginal delivery and for evaluation of cervix ripening. *Placenta Reprod Med*. 2023;2:8. DOI: <https://doi.org/10.54844/prm.2023.0353>
2. Marwah S, Suri J, Shikha T, Sharma P, Bharti R, Mann M, et al. Referral audit of critically ill obstetric patients: a five-year review from a tertiary care health facility in India. *Indian J Crit Care Med*. 2024;28(8):734-740. DOI: <https://doi.org/10.5005/jp-journals-10071-24762>
3. Maaløe N, Kujabi ML, Nathan NO, Skovdal M, Dmello BS, Wray S, et al. Inconsistent definitions of labour progress and over-medicalisation cause unnecessary harm during birth. *BMJ*. 2023;383:e076515. DOI: <https://doi.org/10.1136/bmj-2023-076515>
4. Pipal VR, Singh RK, Singh A, Singh PB, Singh N, Singh A. Incidence and predictors of uterine rupture with maternal and perinatal outcome: a cross-sectional study. *Int J Matern Child Health AIDS*. 2025;14:e020. DOI: https://doi.org/10.25259/IJMA_28_2025
5. Carauleanu A, Solomon-Condriuc I, Vicoveanu P, Socolov D, Scripcariu IS, Vasilache IA, et al. Risks and probabilities of adverse pregnancy outcomes in patients undergoing trial of labor after cesarean—a retrospective study. *Diagnostics (Basel)*. 2024;14(16):1715. DOI: <https://doi.org/10.3390/diagnostics14161715>
6. Brandstetter M, Brandstetter A, Kainz-Schultes S, Jacobs VR, Fazelnia C, Fischer T, et al. Successful trial of labor after two caesarean sections (TOLA2C): analysis of a delivery protocol with feto-maternal outcome. *Geburtshilfe Frauenheilkd*. 2025;85(8):862-869. DOI: <https://doi.org/10.1055/a-2513-6562>
7. Sajjad H, Shakeel N, Kanwal S, Sabir S, Nadeem S, Arshad H. Incidence and risk factors of postpartum hemorrhage in cesarean versus vaginal deliveries: a retrospective study. *Cureus*. 2025;17(10):e95714. DOI: <https://doi.org/10.7759/cureus.95714>
8. Kaur K, Garg SS, Garg M, Grover S. Primary cesarean section in multigravida women: trends and outcomes in a tertiary care setting. *Cureus*.

- 2025;17(6):e85517.DOI:
<https://doi.org/10.7759/cureus.85517>
9. Ayebare E, Hanson C, Nankunda J, Hjelmstedt A, Nantanda R, Jonas W, et al. Factors associated with birth asphyxia among term singleton births at two referral hospitals in northern Uganda: a cross sectional study. *BMC Pregnancy Childbirth*. 2022;22(1):767. DOI:
<https://doi.org/10.1186/s12884-022-05095-y>
10. Gallo DM, Romero R, Bosco M, Gotsch F, Jaiman S, Jung E, et al. Meconium-stained amniotic fluid. *Am J Obstet Gynecol*. 2023;228(5Suppl):S1158-S1178. DOI:
<https://doi.org/10.1016/j.ajog.2022.11.1283>
11. Ononge S, Magunda A, Balaba D, Waiswa P, Okello D, Kaula H, et al. Strengthening Kampala's urban referral system for maternal and newborn care through establishment of an emergency call and dispatch center. *Glob Health Sci Pract*. 2023;11(3):e2200332. DOI:
<https://doi.org/10.9745/GHSP-D-22-00332>
12. Lungu N, Popescu DE, Gorun FI, Nan G, Popa ZL, Manea A, et al. D-dimer as a useful biomarker in early diagnosis of neonatal sepsis: a single-center study from Romania. *Cureus*. 2024;16(7):e65213. DOI:
<https://doi.org/10.7759/cureus.65213>
13. Karim R, Kishwar N, Imran F, Azeem T, Begum S. Fetomaternal outcome of patients referred to tertiary care hospital after trial of labour. *J Postgrad Med Inst*. 2023;37(4):251-5.
14. Suseela TL, Swetha R. Feto-maternal outcome of obstructed labour in government general hospital, Kadapa. *PARIPEX Indian J Res*. 2020;9(2):121-4.
15. Rizvi SM, Gandotra N. Maternofetal outcome in obstructed labour in a tertiary care hospital. *Int J Reprod Contracept Obstet Gynecol*. 2015;4(5):1410-3. DOI:
<https://doi.org/10.18203/2320-1770.ijrcog20150538>
16. KC T, GC N, Sharma D, Lamsal M, Banu H. Fetomaternal outcome of obstructed labor in a tertiary care centre. *J Universal Coll Med Sci*. 2023;11(2):830-3. DOI:
<https://doi.org/10.3126/jucms.v11i02.57986>
17. Dayal N, Jha R. A descriptive study of feto maternal outcomes of obstructed labour in a tertiary care hospital. *Int J Health Sci*. 2022;6(S6):5575-80.
18. Qadir M, Ghauri MS. Obstructed labor: still a harsh reality. *PJMHS*. 2017;11(4):1227-30.
19. Girma T, Gezimu W, Demeke A. Prevalence, causes, and factors associated with obstructed labour among mothers who gave birth at public health facilities in Mojo Town, central Ethiopia: a cross-sectional study. *PLoS One*. 2022;17(9):e0275170. DOI:
<https://doi.org/10.1371/journal.pone.0275170>
20. Afridi U, Shoaib M, Naeem S. Determine the prevalence of obstructed labour also examine the causes, mortality and complications associated to obstructed labour. *Med Forum*. 2019;30(3):8-13.
21. Soomro SB, Soomro R, Shaikh SN, Akhtar T, Shaikh AB, Shaikh SP. Frequency of feto-maternal complications among referral cases to Shaikh Zaid Women Hospital, Larkana after unsuccessful trial of labor. *Rawal Med J*. 2020;45(2):443-6.
22. Qamar A, Asif U, Qamar S. Maternal and fetal outcome in grand multipara. *Pak Armed Forces Med J*. 2015;65(1):135-40.