

## FETOMATERNAL OUTCOME OF OBSTRUCTED LABOR IN A TERTIARY CARE CENTRE

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### ABSTRACT

#### INTRODUCTION

Obstructed labor is the leading cause of hospitalization. It is a preventable obstetric complication. However, it is a major cause of maternal and perinatal morbidity and mortality. The main objective of the study was to find fetomaternal outcome in obstructed labor at tertiary care hospital UCMS-TH, Bhairahawa.

#### MATERIAL AND METHODS

Eighty seven women admitted with features of obstructed labor at our hospital were studied. By clinical examination, diagnosis of cephalopelvic disproportion, malpresentation, malposition, obstruction in birth canal, overdistended bladder, hematuria, rupture uterus and supermoulding of fetal head was detected. Demographic profile of patients, mode of delivery, time interval between referral and admission, intervention done, intrapartum and postpartum complications, maternal and fetal outcome were evaluated.

#### RESULTS

There were 87 cases of obstructed labor among 1655 total deliveries. Most common cause for obstructed labor was cephalopelvic disproportion (34.4%) followed by malpresentation (19.5%) and non progress of labor (17.2%). Majority of the patients were primigravida (43.6%) followed by multiparous (35.6%) and grand multipara (20.6%). Most of cases were unbooked and referral from primary health centers (80.4%). PPH (41.2%), extension of uterine incision (17.4%), followed by sepsis, pyrexia and uterine rupture were common complications. Perinatal morbidity due to obstructed labour requiring NICU admission was (33.9%) and perinatal mortality was (21.7%) mainly due to meconium aspiration, respiratory distress and septicemia.

#### CONCLUSION

Cephalopelvic disproportion and primigravida were the commonest cause of obstructed labour and associated with PPH, extension of uterine incision, uterine rupture, sepsis and neonatal ICU admission and even neonatal death.

#### KEYWORDS

Obstructed labor, Maternal mortality, Perinatal mortality, PPH, Uterine rupture

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## INTRODUCTION

Globally, obstructed labor occurs in an estimated 5% of pregnancies and accounts for 2.8% of all maternal deaths.<sup>1</sup>

Obstructed labor is one of the preventable cause of poor fetomaternal outcome.<sup>2</sup> Obstructed labor is defined as when the presenting part of the fetus cannot progress through the pelvis due to obstruction that usually occurs at the pelvic brim, in the cavity, at the outlet of the pelvis despite having adequate uterine contraction.<sup>3</sup> Obstructed labor is the single most important cause of maternal death and is one of the leading causes of perinatal mortality.<sup>4</sup> Maternal mortality ranges between 1-13% and perinatal mortality between 74-92%.<sup>5,6</sup> It is found to be directly or indirectly responsible for about half of all maternal deaths, affecting mainly primigravida and grand multipara.<sup>7,8</sup> Still most of the cases of obstructed labor are seen in unbooked cases, cephalopelvic disproportion, malposition and malpresentation are main important contributing factors.<sup>9</sup> These factors can be diagnosed in first and second stage of labor by good pelvic assessment and plotting partograph. Foetal death from asphyxia is common in obstructed labor. In primigravida uterine contractions ceases during progress to obstructed labor whereas in multigravida responds with hypertonic uterine contractions till uterine rupture occurs.<sup>6</sup>

Caesarean section remains the mainstay of treatment in obstructed labor nowadays. This decreases the incidence of shock, hemorrhage and trauma of destructive operations. Better the antenatal and intranatal care lesser will be the incidence of obstructed labor.

The objective was to study the fetomaternal outcome and risk factors in obstructed labor at UCMS-TH, Bhairahawa.

## MATERIAL AND METHODS

This observational prospective study was carried out in the Department of Obstetrics and Gynecology in a tertiary care hospital UCMS-TH for a period of six months between January 2022 to June 2022 after being approved by the IRC (UCMS/IRC/172/21), Bhairahawa. Pregnant women who presented with features of obstructed labor or those who developed features during delivery in the Institution were included in the study. Women with incomplete information and refused to be enrolled were excluded. Written consent was taken from the participant. Target sample size was calculated by using the Cochran's formula  $n = z^2pq/d^2$  ( $z$  = level of significance at 5% = 1.96)

$p$  = prevalence of maternal outcome. In this research we have taken the prevalence of maternal outcome = (9%)<sup>10</sup>

$q$  = 1 -  $p$

$d$  = allowable error = 6%

After calculating we got approximately 87 sample so sample size in our study were 87.

## Exclusion criteria

All the preterm deliveries, elective cesarean section, emergency cesarean section in LPOL, fetal distress in active phase and smooth and spontaneous vaginal delivery were excluded.

## Procedure

Detailed history regarding age, parity, gestational age, socioeconomic status, previous obstetric history, past history, antenatal status, duration of labor, details of referral history and management given were recorded. Records were checked and reviewed to collect information about the mothers admitted for obstructed labor or who developed signs of obstructed labor during delivery. General examination was done. By clinical examination diagnosis of CPD, malpresentation, malposition, overdistended bladder, obstruction in birth canal, hematuria, rupture uterus, supermoulding of fetal head, vulval swelling was noted. The classical definition of obstructed labor was followed which is defined as failure of descent of fetal presenting part for mechanical reasons in spite of adequate uterine contractions.

Mode of delivery, time interval between referral, admission, intervention done at tertiary center and related fetomaternal outcome were noted. Consequences of obstructed labor were noted like PPH, uterine rupture, pyrexia, wound infection, bladder injury, abdominal distension, extension of uterine incision. Obstructed labor was diagnosed after analyzing the parameters. Outcome and complications of cesarean section were recorded. Chi square test was used to find out the association between complications and independent factors.

## RESULTS

During this study period, there were total of 1655 deliveries and total live births 1720. Out of 1655 deliveries total elective and emergency cesarean section were 842. After excluding the exclusion criteria there were 380 cases of emergency LSCS in active phase of labor, among them 82 cases had features of obstructed labor during cesarean section, 5 underwent instrumental deliveries in obstructed labor hence the incidence of obstructed labor in our hospital was 5.2%. Maximum cases occurred in the age group 20-25 years (37.9%). The incidence of obstructed labor was more common in primigravida (43.6%) in our study. The majority of patients were from middle class (70.1%) and most of the cases were unbooked (80.4%) and presented to labor room in emergency (Table 1).

Out of 87 cases of obstructed labor, there were 70 referral cases, onset of labor and time of augmentation was not recorded in the referral ticket, so mode of delivery was decided within 1 hour of admission. Out of 70 cases, referred from PHC was 65.5% and District hospital was 14.9% as shown in table 1.

**Table 1. Socio –demographic characteristics of patients (n=87)**

Variables	No. of cases (n=87)	Percentage of cases (%)
<b>Age (years)</b>		
<20	13	14.9
20-25	33	37.9
>25	21	24.1
>30	20	22.9
<b>Parity</b>		
Primi	38	43.6
Multi	31	35.6
Grand multi $\geq 4$	18	20.6
<b>Residence</b>		
Rural	61	70.1
Urban	26	29.8
<b>ANC status</b>		
Booked	17	19.5
Unbooked	70	80.4
<b>Referred</b>		
PHC	57	65.5
District hospital	13	14.9
Institutional	17	19.5

The complications were seen more in age group >30 years (90%) followed by 20-25 years (62.5%). Complications seen in grandmulti, multigravida and primigravida were (94.4%, 77.4%, 57.9%) respectively. Unbooked cases had more complications (87.1%) and among referral, referred from PHC (83.9%) and district hospital (92.9%) had complications. Complications seen in unbooked cases and referral cases were statistically significant in relation to other factors as shown in table 2.

**Table 2. Variables associated with complications**

	Complications		p value
	Yes	No	
<b>Age (years)</b>			
<20	7 (53.8%)	6 (46.2%)	0.048
20-25	20 (62.5%)	12 (37.5%)	
>25	18 (81.8%)	4 (18.2%)	
>30	18 (90%)	2 (10%)	
<b>Parity</b>			
Primi	22 (57.9%)	16 (42.1%)	0.007
Multi	24 (77.4%)	7 (22.6%)	
Grand multi	17 (94.4%)	1 (5.6%)	
<b>ANC status</b>			
Booked	2 (11.8%)	15 (88.2%)	<0.001
Unbooked	61 (87.1%)	9 (12.9%)	
<b>Referred</b>			
PHC	47 (83.9%)	9 (16.1%)	<0.001
District hospital	13 (92.9%)	1 (7.1%)	
Institutional	3 (17.6%)	14 (82.4%)	

The commonest cause of obstructed labour in our study was CPD (34.4%) followed by malpresentation (19.5%), NPOL (17.2%), previous cesarean section (8.04%), malposition (8.04%), uterine anomalies (6.8%), myoma (3.4%) (Table 3).

**Table 3. Causes of obstructed labour**

Causes	No. of cases	Percentage of cases (%)
CPD	30	34.4
Malpresentation	17	19.5
Malposition	7	8.04
Previous CS	7	8.04
Fibroid	3	3.4
Uterine anomalies	6	6.8
NPOL	15	17.2
Grand multi	2	2.2

The complications were noted in 63 patients out of 87 and common complications were PPH (41.2%), extension of uterine incision (17.4%), pyrexia (15.8%), wound infection (15.8%), uterine rupture (14.2%), distension of abdomen (11.1%) and bladder injury (6.3%). Cases with bladder injury following repair of injury foley's catheterization done for 21 days. Most cases received blood transfusions (58.7%) due to PPH and as patients were already anemic at time of admission. There was 1 case of maternal death (1.5%) due to obstructed labor complication leading to rupture uterus and PPH as depicted in table 4.

**Table 4. Maternal complications in obstructed labor**

Complications	No. of cases	Percentage of cases (%)
Pyrexia	10	15.8
Blood transfusions	37	58.7
PPH	26	41.2
Extension of uterine incision	11	17.4
Uterine rupture	9	14.2
Bladder injury	4	6.3
Wound infection	10	15.8
Distension of abdomen	7	11.1
Mortality	1	1.5

The commonest mode of delivery in obstructed labor was cesarean section 73 (8.6%) out of total cesarean deliveries, instrumental deliveries were done in 10% cases. Rupture uterus was seen in 15 among total deliveries out of which 9 cases in obstructed labor and repair was done in 8 cases and subtotal hysterectomy in 1 case.

The total live births were 1720 during study period, among them in obstructed labour 70/87 (4.06%) and total perinatal deaths 78, out of which 17/87 (21.7%). Perinatal complications were birth asphyxia, meconium aspiration and septicemia seen in 53/87(60.9%). Among the total births NICU admission was required in 156 cases and out of which in obstructed labour 53(33.9%). Common cause of death was birth asphyxia (Table 5).

**Table 5. Magnitude of obstructed labor**

Events	Total number	Obstructed labour	
		Number	Percentage
Total deliveries	1655	87	5.2%
Cesarean deliveries	842	73	8.6%
Instrumental deliveries	10	5	10%
Repair of rupture uterus	15	8	53.3%
Subtotal hysterectomy	5	1	20%
Maternal death	5	1	20%
Live birth	1720	70	4.06%
Perinatal death	78	17	21.7%
(still birth, IUFD, NND)			
NICU admission	156	53	33.9%

## DISCUSSION

Obstructed labor is still a life-threatening obstetrical complication associated with significant maternal as well as fetal morbidity and mortality. In general, women present very late at referral centre due to lack of transport, delay in referral and delay in early recognition of obstructed labor and financial problems. The incidence of obstructed labor was 5.2% in our study whereas the incidence of obstructed labor (12.2%) reported by Fantu et al<sup>11</sup> and (4%) reported by Melah et al.<sup>12</sup> The high incidence in our hospital was due to poor health care delivery at peripheral health centre and delayed referral to tertiary health centers.

Incidence of obstructed labor was 43.6% in primigravida in our study. This is similar to the studies done by Ara et al (40.8%).<sup>13</sup> Majority of cases were unbooked (80.4%) and referred from PHC (65.5%) which reflects the poverty, illiteracy and lack of emergency obstetric care in rural areas and unskilled birth attendants and poor referral system.

In our study CPD (34.4%) accounts for the common cause of obstructed labor followed by malpresentation (19.5%). The study done by Fantu et al<sup>11</sup> in Ethiopia the causes of obstructed labor were CPD in 67.6% and malpresentation in 27.9%. A study done by Aboyeji et al<sup>14</sup> showed cephalopelvic disproportion commonest cause of obstruction in 56.7% cases.

The commonest maternal complication in our study was PPH (41.2%) followed by extension of uterine incision (17.4%), pyrexia (15.8%), wound infection (15.8%) and rupture uterus (14.2%) where study done by Melah et al<sup>12</sup> and Aboyeji et al<sup>14</sup> found puerperal sepsis (31.3%) and wound infection (34.3%) was most common morbidity.

The majority of cases were delivered by caesarean section as safe practice 83.9% which is similar to study done by Konje et al<sup>15</sup> from Ibadan performed on 82%. The incidence of LSCS was high in our study as the incidence of instrumental delivery was low and no destructive operation was done. There were 9 cases of rupture uterus out of which 8 were repaired and 1 underwent subtotal hysterectomy so the incidence of rupture uterus was 14.2%. Maternal mortality in our study was 1/87 (1.5%) where in study done by Nwogu-ikojo et al (3.3%).<sup>16</sup>

Perinatal mortality was (21.7%) in our study, whereas (27.1%) in study done by Nwogu-ikojo et al<sup>16</sup> and morbidity was most commonly due to asphyxia, meconium aspiration and RDS.

## CONCLUSION

Obstructed labor is still a major cause of maternal and perinatal morbidity and mortality in developing countries and accounts eight percent of maternal death globally. Majority of the women were primigravida, unbooked and referral from primary health centers, as result of lack of health education, poor health care system, delayed referral and lack of antenatal care were important contributing factors. Cephalopelvic disproportion was the common cause of obstructed labor and the mode of delivery was caesarean section in obstructed labor. So early detection of obstructed labor and immediate safe delivery can decrease the incidence of fetomaternal morbidity and mortality.

## REFERENCES

- Filippi V, Chou D, Ronsmans C, Graham W, Say L. Levels and causes of maternal morbidity and mortality. *Disease control priorities*.2016;2:1-31.
- Shaikh S, Shaikh A, Shaikh S, Isran B. Frequency of obstructed labour in teenage pregnancy. *Nepal Journal of Obstetrics & Gynaecology*.2012;7(1).
- Alkire BC, Vincent JR, Burns CT, Metzler IS, Farmer PE, Meara JG. Obstructed labor and cesarean delivery: the cost and benefit of surgical intervention. *PLoS One*. 2012; 7(4):e34595.
- Weeks A, Lavender T, Nazziwa E, Mirembe F. Personal accounts of 'near-miss' maternal mortalities in Kampala, Uganda. *BJOG: An International Journal of Obstetrics & Gynaecology*.2005;112(9):1302-7.
- Rahman M, Akhter H, Chowdhary M-E-EK, Yusuf H, Rochat R. Obstetric deaths in Bangladesh, 1996-1997. *International Journal of Obstetrics & Gynecology*. 2002;77(2):161-9.
- Justus Hofmeyr G, Say L, Gulmezoglu A. Systematic review: WHO systematic review of maternal mortality and morbidity: the prevalence of uterine rupture. *BJOG: An International Journal of Obstetrics & Gynecology*. 2005;112(9):1221-8.
- Cox M. Contracted pelvis in Nigeria. *BJOG: An International Journal of Obstetrics & Gynecology* .1963;70(3):487-94.
- Arrowsmith S, Hamlin EC, Wall LL. Obstructed labor injury complex: obstetric fistula formation and the multifaceted morbidity of maternal birth trauma in the developing world. *Obstetrical & Gynecological Survey*. 1996;51(9):568-74.
- Konje JC, Ladipo OA. Nutrition and obstructed labour. *The American Journal of clinical nutrition*.2000;72(1):291S-7S.
- Rizvi SM, Gandotra N. Maternofetal outcome in obstructed labour in a tertiary care hospital. *Int J Reprod Contraception, Obstetrics and Gynecology*.2015;4:1410-3.
- Fantu S, Segni H, Alemseged F. Incidence, causes and outcome of Obstructed labour in Jimma University specialized hospital. *Ethiopian Journal of Health Sciences*. 2010;20(3).
- Melah G, El-Nafaty A, Massa A, Audu B. Obstructed labour: a public health problem in Gombe, Gombe State, Nigeria. *Journal of Obstetrics & Gynecology* 2003;23(4):369-73.
- Ara A. Outcome of Obstructed labour. *Int Journal of Obstetrics and Gynecology Original* 2011;18(3).
- Aboyeji A, Fawole A. Obstructed labour in Ilorin, Nigeria. A one-year prospective study. *Niger Med Pract*. 1999;38:1-3.
- Konje J, Obisesan K, Ladipo O. Obstructed labor in Ibadan. *International Journal of Gynecology & Obstetrics*.1992;39(1):17-21.
- Nwogu-Ikojo EE, Nweze SO, Ezegwui HU. Obstructed labour in Enugu, Nigeria. *Journal of Obstetrics and Gynecology*.2008;28(6):596-9.