

## **Research Article**

### **Indication of Caesarean Section in Intrauterine Fetal Demise**

Hooja Nupur<sup>1</sup>, NandaSaumya<sup>2</sup>, MitalPremlata<sup>3</sup>, Swati Nayan<sup>4</sup>, SapnaAseri<sup>5</sup>, Sangeeta<sup>6</sup>

<sup>1,3</sup>Professor, <sup>2</sup>Senior Resident, <sup>4,5,6</sup>Resident, Department of Obstetrics & Gynaecology, S.M.S. Medical College, Jaipur, Rajasthan, India

#### **\*Corresponding author**

Dr. Nupur Hooja

**Email:** [hoojasjaipur@gmail.com](mailto:hoojasjaipur@gmail.com)

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**Abstract:** Vaginal birth is the recommended mode of delivery for most women with intrauterine fetal demise, but caesarean birth would need to be considered with some. The factors related to the indication of caesarean section in pregnant women with dead fetus are poorly studied. The study of fetal death is crucial in promoting actions for maternal and child health. Aim of the study was to determine the incidence, indications and maternal morbidity and mortality associated with Caesarean section in patients with intrauterine fetal and to establish the place of Caesarean section in present day scenario. A retrospective case review of all patients with IUFD was done. It included pregnant women diagnosed with fetal death, with gestational age 20 weeks onwards. Maternal demographic profile, delivery-IUFD interval, mode of delivery: caesarean section/ vaginal and maternal complications were the main outcome measures. Total deliveries during the audit period were 12699; total number of caesarean section was 3386 (26.6%). Number of intrauterine fetal demise beyond 20 weeks of pregnancy was 162 out of which 21(12.9%) were terminated by caesarean section. The main indications were failed induction of labour, previous 2 LSCS, antepartum haemorrhage, hypertensive disorders of pregnancy and obstructed labour. Protective factors were use of misoprostol and low birth weight of fetus. 8 (38%) patients delivered by caesarean section developed major postoperative complications like postpartum haemorrhage, shock, endometritis, and wound infection. In conclusion, although the recommended mode of delivery of IUFD is vaginal, caesarean section becomes indicated in certain cases.

**Keywords:** Intrauterine fetal death, Antepartum haemorrhage, Hypertensive disorders.

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#### **INTRODUCTION**

Fetal mortality (intrauterine death of a fetus) at any gestational age is a major but often overlooked public health issue. Much of the public concern surrounding reproductive loss has focused on infant mortality, due in part to a lesser knowledge of the incidence, etiology, and prevention strategies for fetal mortality. It is estimated that more than 7.6 million perinatal deaths occur worldwide each year, of which 57% are of fetal deaths, mostly in developing countries and underdeveloped[1].

WHO recommends the inclusion of all infants born dead and weighing 1000 g or more at birth (if birth weight is available), or after 28 completed weeks of gestation, or attainment of 35 cm crown-heel length [2].

RCOG Green-top Guideline No. 55 recommends that labour and birth should take into account the mother's preferences, her medical condition and previous intrapartum history. Women should be strongly advised to take immediate steps towards delivery if there is sepsis, preeclampsia, placental abruption or membrane rupture, but a more flexible approach can be discussed if these factors are not present. Vaginal birth is the

recommended mode of delivery for most women, but caesarean birth would need to be considered with some[3].

The factors related to the indication of caesarean section in pregnant women with dead fetus are poorly studied. The study of fetal death is crucial in promoting actions for maternal and child health and since the recommended mode of delivery is vaginal, aim of this study was to study the main factors associated with caesarean indication in pregnant women with a dead fetus.

#### **MATERIAL AND METHODS**

This is a cross-sectional, retrospective case review of all patients with IUFD between 1<sup>st</sup> January 2014- 31<sup>st</sup> July 2014 in the Department of Obstetrics and Gynaecology, SMS Medical College, Jaipur. We evaluated factors associated with caesarean section in pregnant women with fetal death after the 20th week of pregnancy or with fetal birth weight greater than 500 g when gestational age was not known.

The variables studied were: gestational age confirmed by ultrasonography performed before the 20<sup>th</sup>

week of pregnancy; numbers of previous pregnancies, previous caesarean sections, no previous vaginal deliveries, prenatal care, multiple gestation, low birth weight of the fetus, when less than 2,500 g, macrosomia; indications for caesarean, and the method of induction of labour .The demographic variables included maternal age in years and parity.

Obstetric factors included admission status of the mother (booked or referred), antenatal care attendance for present pregnancy coded as no or yes, mode of delivery [spontaneous vaginal, assisted vaginal (breech), and caesarean section], presence of one or more of the following: prelabour rupture of membranes, preterm labour, hypertensive pregnancy disorders (pre-eclampsia and eclampsia), antepartum haemorrhage comprising (placenta praevia and abruption placenta), cephalopelvic disproportion (CPD), prolonged or obstructed labour, severe anaemia (haemoglobin level <7g/dL).

Foetal characteristic was birth weight <2500g and ≥2500g.Fetus with lethal congenital anomalies whose termination was planned were excluded from the study.

For statistical analysis, we considered all variables as dichotomous yes-or not, comparing in contingency tables. We used the test of  $\chi^2$  for association of the variables. The ODDS ratio was calculated (OR) as a measure of risk, determining its confidence interval (CI) of 95%.

**RESULTS**

This study was motivated by interest in the knowledge of the determinants of caesarean section in pregnant women with fetal death.

Total deliveries during the audit period were 12699. The mode of delivery was divided into caesarean or

vaginal delivery either normal or assisted. Total number of IUFD was 162 of which 141(87.1%) were delivered vaginally and 21(12.9%) by LSCS.Of the 21 LSCS, unbooked patients were 9 (42.8%). The overall adjusted rate of IUFD was 12.7/1000 total births.

In the study by Anderson Gonçalves Sampaio and Alex Sandro Rolland Souza [4], 27.5% pregnant women with fetal deaths underwent caesarean section.

Majority of IUFD occurred in maternal age group of 20 –35 years (74.7%) and maternal parity of 0 – 2 (66.7%).The mean maternal age was 28 years (Table 1).

Bivariate analysis was performed, identifying the main factors significantly associated with caesarean section in pregnant women with fetal death. It was observed that women with ages greater than or equal to 35 years (OR = 4.3, 95% CI 3.75 to 4.8), with a history of one or more caesarean sections (OR = 7.58, 95% CI = 2.07 to 21.04), placenta praevia (OD=14.3, 95% CI=13.51-15.09)NA multiple pregnancy (PR = 2.1, 95% CI 1.35 to 3.56) and NA presence of prenatal care (PR = 2.2, 95% CI = 1.24 -4.1) had a higher risk of undergoing caesarean section compared to vaginal delivery (normal and assisted). Rather, the possibility of undergoing caesarean section was lower among women with previous vaginal delivery (OD=0.13, 95% CI=0.02-0.54), -0.88), and low birth weight (OD=0.7, 95% CI=0.36-1.44).aged less than or equal to 19 years NA(PR = 0.5, 95% CI 0.27 to 0.96), nulliparous and primiparous (PR = 0, 6, 95% CI 0.39 to 0.92) with no previous vaginal deliveries (PR = 0.6, 95% CI 0.40 to 0.96). No association was observed for the other variables, such as schooling or less three full years (PR = 0.8, 95% CI 0.44 to 1.53) and marital status when the absent partner (PR = 1.0 95% CI = 0.69 to 1.52) (Table 1).

**Table 1: Demographic Profile of Women**

| Variable           | No. of women who underwent Vaginal Delivery | No. of women who underwent LSCS/ Hysterotomy |
|--------------------|---|--|
| <b>Age (years)</b> |   |  |
| <20                | 18(12.7%)                                   | 5(23.8%)                                     |
| 20-24              | 36(25.5%)                                   | 3(14.3%)                                     |
| 25-29              | 38 (27%)                                    | 3(14.3%)                                     |
| 30-34              | 37(26.2%)                                   | 4(19%)                                       |
| >35                | 12(8.6%)                                    | 6(28.6%)                                     |
| <b>Parity</b>      |   |  |
| 0                  | 28(19.9%)                                   | 6(28.6%)                                     |
| 1                  | 40(28.4%)                                   | 3(14.3%)                                     |
| 2                  | 28(19.9%)                                   | 3(14.3%)                                     |
| 3                  | 24(17.0%)                                   | 4(19.0%)                                     |
| >=4                | 21(14.8%)                                   | 5(23.8%)                                     |

The fetal death was classified according to age in early pregnancy, occurring between the 20th and 28th weeks, 28-37 weeks and more than 37 weeks. Majority

of fetal deaths were in 28-37 wks of gestation (38.3%) of which 14.5% were delivered by LSCS. 15.9% of fetal deaths of gestation more than 37 weeks were

terminated by LSCS. There was an increased risk for caesarean delivery in foetuses at term (OR = 1.4, 95%

CI 0.70 to 2.01). There was no association with gestational age over 40 weeks (Table 2).

**Table 2: Gestational Age and Mode of Delivery**

| Gestational Age in weeks | Vaginal   | LSCS/ Hysterotomy | Total |
|--------------------------|-----------|-------------------|-------|
| 20-28                    | 51(91.1%) | 5(8.9%)           | 56    |
| 29-36                    | 53(85.5%) | 9(14.5%)          | 62    |
| >37                      | 37(84.1%) | 7(15.9%)          | 44    |

The patients who had labour induced, regardless of the method used, were less likely to undergo caesarean (OR = 0.2, 95% CI = 0.11 to 0.48). Majority of IUFD delivered by LSCS had identifiable aetiology. (OR = 0.3, 95% CI 0.06-0.58) (Hypertensive disorders, 23.8% (OR = 1.26, 95% CI 0.71 to 1.81) and antepartum haemorrhage, 23.8% (OR = 14.3, 95% CI 13.51 to 15.09) represent the most common indications associated with caesarean section. After multivariate

analysis, factors that were significantly associated with caesarean delivery were maternal age, previous one or more caesarean sections, multiple gestation, use of misoprostol for induction of labour (OR=0.3, 95% CI=0.06-0.58), low fetal birth weight, presence of hypertensive disorders and placenta previa (Table 3). Table 4 shows various risk and protective factors for LSCS/hysterotomy.

**Table 3: Indications of LSCS/Hysterotomy**

|                                     |           |
|-------------------------------------|-----------|
| Failed induction of labour          | 4(19.04%) |
| Previous 2 LSCS                     | 4(19.04%) |
| APH                                 | 5(23.80%) |
| Hypertensive disorders of pregnancy | 5(23.80%) |
| Obstructed labour                   | 2(9.52%)  |
| Multifoetal gestation               | 1(9.52%)  |

**Table 4: Risk Factors and Protective Factors for LSCS/Hysterotomy**

| Risk Factors                        | Odds Ratio | 95% Confidence Interval |
|-------------------------------------|------------|-------------------------|
| Maternal Age >35                    | 4.3        | 3.75-4.8                |
| Previous one /two caesarean         | 7.58       | 2.07-21.04              |
| Hypertensive disorders of pregnancy | 1.26       | 0.71-1.81               |
| Placenta praevia                    | 14.3       | 13.51-15.09             |
| <b>Protective Factors</b>           |            |                         |
| Use of misoprostol                  | 0.3        | 0.06-0.58               |
| Low birth weight                    | 0.7        | 0.36-1.44               |
| Previous vaginal delivery           | 0.13       | 0.02-0.54               |

High rates of caesarean section in PIH patients is motivated by more rapid resolution of symptoms and fetal death, in view of the maternal complications of preeclampsia in a conservative approach. Importantly, there is a high incidence of caesarean section even in pregnant women with hypertensive syndrome and a live fetus. Possibly for this reason, it was observed preeclampsia as a major determinant of caesarean section, remaining significantly associated even after logistic regression analysis.

A significant association was noted with previous caesarean section and multiple pregnancies. The attempt of vaginal delivery in previous caesarean section is recommended when the patient has only one previous caesarean and there is possibility of performing vaginal delivery, or maternal conditions are favourable [5,6]. Specifically in patients with fetal death, which often have unfavorable cervix, induction of labour becomes an alternative [6]. Currently,

misoprostol is the method of choice for induction, but its use is contraindicated due to the increased risk of uterine rupture in the presence of previous caesarean. Caesarean sections have been often performed in patients with previous caesareans for lack of consensus on the best approach in such situations [7]. Hypertensive disorders are not an absolute indication for caesarean section, but their definitive treatment is the termination of pregnancy [8]. In the study by Anderson Gonçalves Sampaio and Alex Sandro Rolland Souza [4] the major indication for the caesarean was placental abruption (49.3%) and included both antepartum and intrapartum fetal deaths which explained the higher caesarean rate.

Various studies have been done to evaluate the best mode of delivery in multiple gestation. However, in pregnant women with antepartum fetal death, vaginal route remains the most recommended [6].

Induction of labour was an important protective factor against caesarean indication. Misoprostol is the most commonly used method, which remained statistically significant after logistic regression analysis.

Maternal morbidity was associated with 11.3% of patients with fetal demise who delivered vaginally. 7.8% of the vaginal deliveries were complicated by a perineal, vaginal, or cervical laceration necessitating surgical repair. Severe shoulder dystocia complicated one of the vaginal deliveries. Other complications were urinary tract infection (2.1%) and postpartum haemorrhage (0.75%). The frequency and severity of maternal morbidity in LSCS were higher as compared to vaginal route. 38% women who delivered by LSCS developed complications. Postpartum haemorrhage developed in 19%, shock in 4.7% and wound infection in 14.3%. Uterine dehiscence was seen during LSCS and was repaired. One woman developed DIC, requiring blood components. No maternal mortality occurred. Total mean hospital stay was 9.8+/- 3.7 days.

Being a tertiary care centre, obstructed labour with foetal death was an important factor for caesarean section (9.52%) in our study. The referral cases had intrapartum deaths with inappropriate management of labour. We observed that these were mostly in low-risk pregnancies (usually undiagnosed CPD) and were more easily preventable than antepartum deaths. Lawn *et al.* [9] also stated that rates of fresh stillbirths are assumed to reflect the quality of intrapartum care (care in labour), while rates of macerated stillbirths are assumed to reflect the quality of fetal growth and of care during the antenatal period. In the published data globally, the split is 15–40% intrapartum and 40–60% antepartum, though this may vary in settings based on risk factors and availability and quality of intrapartum care [10].

## CONCLUSION

Although the recommended mode of delivery of IUFD is vaginal, caesarean section becomes indicated in certain cases. The main indications for caesarean section in our study were antepartum haemorrhage and previous two or more LSCS in which vaginal route of delivery was not an alternative. The frequency and

severity of maternal morbidity after caesarean section are quite high compared to vaginal route. Efforts to reduce fetal mortality should be directed at prevention and correct diagnosis and early referrals.

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