

## STUDY OF MATERNAL AND PERINATAL OUTCOME IN PATIENTS REFERRED TO TERTIARY CARE HOSPITAL-A PROSPECTIVE STUDY

### Gynaecology

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### ABSTRACT

**Introduction-** Pregnancy is a physiological state and pregnancy related morbidity and mortality are almost preventable. Timeliness and appropriateness of referral are a challenge to obstetricians. Since the delay in referral affects the maternal and perinatal outcome adversely, hence identification of at risk patients and obstetric emergencies and timely referral is of immense importance. Maternal and perinatal mortality rates are the yardsticks and an index of efficiency of not only antenatal and intranatal care but also of the socio-economic conditions of the country. 75% of maternal deaths occur during childbirth and the postpartum period, and the vast majority of maternal deaths and injuries are avoidable when women have early access to health care before, during and after childbirth.

**Aims:** To review the referred obstetric cases for reasons of referral and to study the maternal and perinatal outcome.

**Methods:** Prospective observational study, comprising 100 referred obstetric cases to tertiary care hospital that require admission and immediate management, for a period of 1 year. Complete history, basic investigations and specific investigations as required were carried out for each case. Mode of delivery was documented, maternal complications if any, were managed and maternal and perinatal outcome was documented.

**RESULTS:** Majority of the patients (66%) were booked at the place from where they were referred and almost (59%) patients had to travel > 30 km to get specialized obstetric care. 46 % were referred for preeclampsia & related conditions. 13 patients developed complications intrapartum or immediate postpartum period. 11 stillbirths were recorded and 54 babies were admitted to NICU due to associated morbidity.

**CONCLUSION:** Peripheral health services needs to be strengthened and practice of early referral needs to be implemented for better maternal and perinatal outcome. Simultaneously, avoid unnecessary referrals which add on to the burden of tertiary care hospitals.

### KEYWORDS

Referred, Tertiary Health Care, Maternal Morbidity & Mortality, Perinatal Outcome, obstetric emergencies

### INTRODUCTION:

Antenatal care implies care of the woman during pregnancy with a primary aim of achieving healthy mother and healthy baby. The purpose of antenatal care is to identify 'High Risk' cases as early as possible from a large group of antenatal mothers, and arrange for them, timely and appropriate skilled care.

In spite of great advances in the medical field and improved quality of healthcare available in our country, the maternal mortality in India is very high.

The key factors contributing the adverse maternal outcomes are lack of trained birth attendants, lack of education, low status of women in society, poor families, financial dependency of women, and delay in seeking medical treatment<sup>1</sup>.

In the last decade the approach to reduce maternal and perinatal mortality has shifted from the risk approach involving identification of high risk pregnancies which can develop complications to provision of skilled care during delivery and emergency obstetric care when a complication occurs.

For providing access to essential obstetric care, the referral system is an essential component of any health system which is important in pregnancy and child birth.<sup>2</sup> Especially in a developing country like India, where majority of the population lives in rural areas, lacking access to essential obstetric facilities, timely referral and intervention of high risk pregnancies can reduce foeto-maternal morbidity and mortality. Whereas, unnecessary referrals increase workload on tertiary hospitals and also cause discomfort to pregnant women and relatives.<sup>3</sup> Referral services for identification and referral of high risk pregnancies are an integral part of maternal and child health services. For a large majority of developing countries this aspect of health system remains weak.<sup>4</sup>

The 3-tier health care delivery system was conceived in such a manner that the patients in need of a higher level of expertise and care could be referred accordingly from primary to secondary directly to tertiary level centre. The Prevention of Maternal Mortality (PMM) network study has proposed a three delays model for referrals in obstetric and gynaecological emergencies.<sup>5</sup>

A study showed that 92% of maternal deaths are due to delay in referral

and case management, first delay in making decision to seek care, 2nd delay is due to delay in identifying and reaching a medical facility, 3rd delay is due to delay in receiving adequate and prompt treatment even after reaching a care institution.<sup>6,7</sup>

With this background, present study was undertaken to evaluate the pattern of obstetric cases referred to tertiary hospital and maternal and perinatal outcome amongst referred patients.

### AIMS-

To review the referred obstetric cases for reasons of referral and to study the maternal and perinatal outcome.

### MATERIALS AND METHODS:

It is a prospective, single centered, cross sectional observational study for a duration period of one year. Includes 100 cases of obstetric referrals from periphery to tertiary care hospital that require admission and immediate management.

**Inclusion Criteria:** All referred ANC cases to our tertiary care institute > 20 weeks gestation.

### Exclusion Criteria:

- 1.) Previously Booked cases at our tertiary care institute.
- 2.) Post partum referrals
- 3.) Self referrals

Written informed consent was taken from the subjects. All the cases were interrogated with the use of following methods:

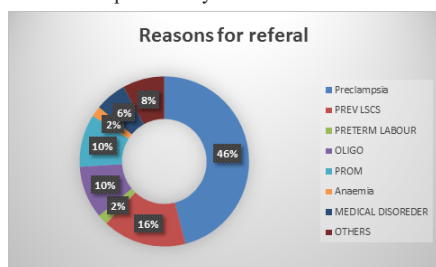
- Complete and Thorough history taking
- Complete physical and obstetric examination.
- Basic investigations like CBC, blood grouping, urine routine and microscopy, obstetric ultrasound.
- Case specific investigations were carried out as mandated by clinical condition of the patient.
- Management of the patient was documented, whether conservative or interventional.
- Mode of delivery was noted, vaginal or operative.
- Factors contributing to decision making on mode of delivery were noted.
- Maternal outcome in the form of maternal morbidity & mortality were noted.

- Neonatal outcome documented under following headings: term\preterm, live\still birth, birth weight, stay in NICU, clinical course of baby in first 7 days, complications if any were also noted.

### RESULTS:

After thorough analysis of data ,following observations were seen- Maximum patients (79%) were in age group 20-30 years. Majority of the patients (66%) were booked at the place from where they were referred. Maximum patients were referred from district level hospital (58%).Maximum (59%)patients had to travel > 30 km to get specialized obstetric care.

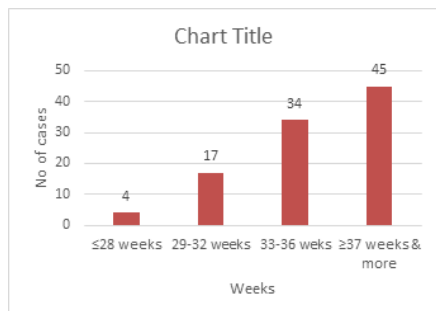
Majority of the patients 46 % were referred for preeclampsia & related conditions. 16 patients had previous caesarean section as an indication of referral. Though prevalence of anemia is high in pregnancy, only 2 patients were referred particularly for cause of anemia.



**Graph 1: distribution Of Cases According To Reason For Referral As Mentioned On Referral Slip:**

Most of the patients came by Ambulance 78% cases, while 22% patients reached by private vehicle. Maximum patients 76% came with medical assistance.

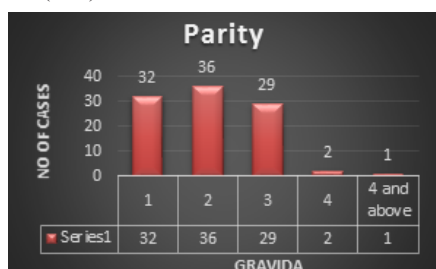
45% patients delivered beyond 37 weeks while 4% patients delivered before or in 28 weeks.



**Graph 2: Distribution Of Cases According To Gestational Age At Delivery**

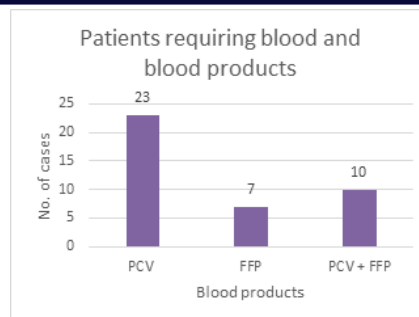
While 55 % patients underwent caesarean section, 45% patients had vaginal delivery.

Majority of patients were multigravida (67%), followed by primigravida (32%).



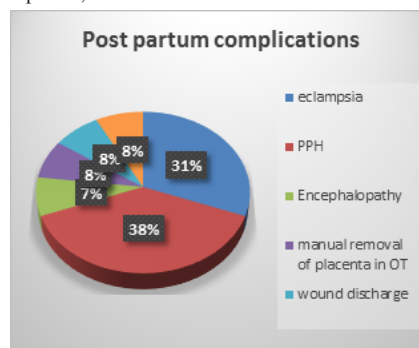
**Graph 3: Parity Wise Distribution Of Cases**

40 patients required blood or blood products transfusion. Major indication for transfusion of blood & blood products were anemia associated with preeclampsia, previous LSCS in labour, abruptio placentae, post partum hemorrhage, placenta previa & deranged coagulation profile.



**Graph 4: Distribution According To Number Of Patients Requiring Blood/blood Products**

13 patients developed complications intrapartum or immediate postpartum period, while 4 maternal mortalities were also recorded.

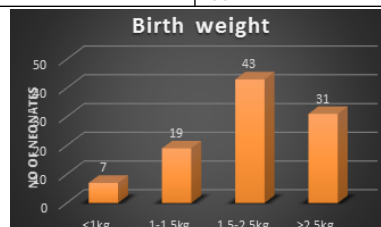


**Graph 5: Distribution Of Cases According To Intrapartum & Immediate Postpartum Complications:**

11 stillbirths were recorded while 89% were live born. Of these 7 were <1kg (ELBW), 19 were between 1-1.4 kg (VLBW), 43 were between 1.5-2.4 kg (LBW) & 31 were >2.5 kg.

**Table 1: Distribution Of Cases According To Perinatal Outcome**

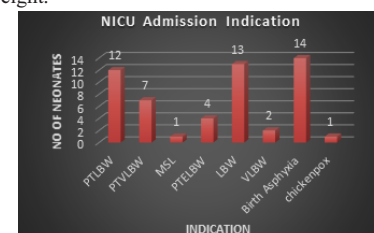
| perinatal outcome | No. of cases |           |
|-------------------|--------------|-----------|
|                   | <37 weeks    | >37 weeks |
| Live born         | 48(48%)      | 41(41%)   |
| Stillborn/IUD     | 7(7%)        | 4(4%)     |
| TOTAL             | 100          |           |



**Graph 6: Distribution Of Birth Weight**

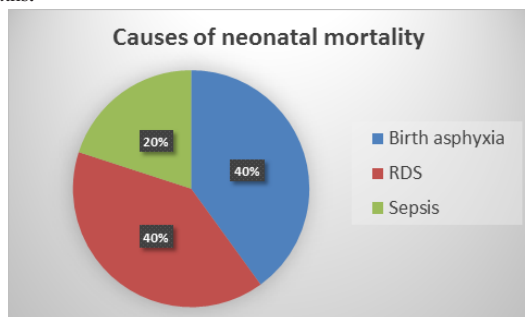
21% babies had Apgar score 6 or less, while 79% had score between 7-10 at 1 minute. Whereas Apgar score at 5 minutes showed that 11% had score 6 or less & 89% had Apgar score 7-10.

54 babies were admitted to NICU due to associated morbidity. Major indications for NICU admissions were birth asphyxia, prematurity and low birth weight.



**Graph 7: Distribution Of Cases According To Neonatal Morbidity**

Neonatal mortality in our study was 20. All newborn that died were preterm low birth weight. Sepsis was contributory factor in 4 neonatal deaths.



**Graph 8: Distribution Of Cases According To Neonatal Mortality**

## DISCUSSION

Considering the age wise distribution, it was found that maximum patients belonged to the age group 20-30 years (79 %). Similar results were found by Jyoti et al (2017)<sup>8</sup> with 87% patients in the age group 20-30 years .MorshedaBanu et al (2010)<sup>9</sup> with majority (74%) of the respondents between age 20-35 years.

In the present study of the total 100 cases selected 66 % patients were booked at the referring centre while 34% cases were unbooked. Owolabi A T et al (2008)<sup>10</sup> in their study of maternal complications and perinatal outcomes in booked and unbooked Nigerian mothers observed that 29% of the 1,154 deliveries were unbooked. Similar results were found by Sable et al (2015)<sup>11</sup> with only 25% being unbooked at referring centre. There is a positive correlation between booked mothers with good feto-maternal outcome. Proper antenatal care and institutional deliveries enable obstetricians to diagnose complications at an early stage and early management results in better outcome.<sup>12</sup>

In our study maximum number of patients (94%) was referred from government hospitals, (district hospital 58%, from primary health centre 36%) while only 6 % patients were referred from private hospitals. Similar results were found by Sable et al(2015)<sup>11</sup> with maximum patients being referred from district level hospitals (42.37%) followed by RH (34.74%)K narsariya et al (2017)<sup>13</sup> in their study of obstetrics referrals in west Bengal showed that 34% (n=34) of total referrals were from state govt. hospitals of neighboring districts followed by 27% (n=27) from rural hospitals indicating that major burden of referrals are from rural India

When reviewing the reasons for referral in the present study commonest reason was pre-eclampsia 46% followed by previous LSCS 16%. Similar findings were obtained by Sable et al (2015)<sup>11</sup> with major indication of referral being preeclampsia & related conditions (25.79%).RathiCharu et al (2010)<sup>14</sup>, Mahajan et al (2017)<sup>15</sup>, Shrivastav et al (2014)<sup>16</sup> also noted that hypertensive disorders of pregnancy was the major indication for referral in their studies 26%, 39% , 21.39% respectively. Other causes were preterm labour (26%), and medical disorders complicating pregnancy (21%)<sup>14</sup> & APH (23%) and maternal anemia<sup>15</sup> and meconium stained liquor.<sup>17</sup>

In the present study 78% patients reached the hospital by ambulance while 22% cases were transported by private vehicle. While considering the distance of referral centre it was found that 59% cases came from distance > 30km. Maximum patients 76% came with medical assistance while 24 patients were referred without any medical assistance. MorshedaBanu et al (2010)<sup>9</sup> revealed that 80% of the women referred from delivery centres were accompanied by BRAC health providers followed by relatives. Sakhare A.P. et al(2008)<sup>18</sup> observed that 65% cases travelled more than 50 km distance before reaching to hospital and had increased incidence of intra operative complications and haemorrhage.

In the present study maximum patients 45% were full term followed by 32-36 weeks (34%), 17 % patients were between 28-32 weeks while only 4% patients were <28 weeks. RathiCharu et al(2010)<sup>14</sup> :Of those neonates requiring nursery care, 56.25% were 28-32 weeks of gestation at birth while 55% of those roomed in were 37 weeks or more at the time of birth. 56% of all neonates had LBW.<sup>14</sup>

In the present study majority of patients were multigravida (67%), followed by primigravida (32%). Similar results were found by Jyoti et al(2017)<sup>8</sup>, with 50% patients as multigravida.

In the present study of 100 referred cases according to mode of delivery. 45% patients had vaginal delivery, while 55% patients underwent caesarean section. Narsariya et al (2017)<sup>13</sup> in their study found 61 % of the referred patients underwent emergency LSCS whereas 39% had vaginal delivery which is similar to a study conducted by Ambreen et al(2012)<sup>19</sup> where 62% of referred cases underwent caesarean section.

In our study, out of 100 referred cases, 40 % required transfusion of blood or blood products. In study by Sable et al(2015)<sup>11</sup> 31.84% of the patients required blood/blood products transfusion. RathiCharu et al (2010)<sup>14</sup> in their study found that packed cell volume was required in 24%, fresh frozen plasma in 12% & whole blood in 6% of cases In the present study 13 patients out of 100 developed complications in intrapartum or immediate post-partum period. Postpartum haemorrhage was observed as major complication during immediate postpartum period by Sable et al (2015)<sup>11</sup>.

In the present study there were 4 maternal mortalities. All 4 were critical on admission. Sable et al(2015)<sup>11</sup> reported 3(0.79%) maternal mortalities & behind these there were total 70(18.42%) near miss cases which provide valuable information on the quality of antenatal care at the periphery.

48% patients delivered live born baby before 37 weeks, while 41% were delivered beyond 37 weeks of gestation. Out of total 11 still births, 7% were less than 37 weeks & 4 % were more than 37 weeks GoswamiD et al(2017)<sup>20</sup> noted out of the 115 births, 92 were live and 23 were still births.

In the present study total number of live born babies was 100. Of these 7% were <1kg (ELBW), 19% were between 1-1.4 kg (VLBW), 43% were between 1.5-2.4 kg (LBW) & 31% were >2.5 kg (normal for birth weight) .RathiCharu et al (2010)<sup>14</sup> noted that 56% of all neonates were low birth weight in their study. Similar results were found by Sable et al(2015)<sup>11</sup> with 54.87% of the babies having low birth weight (birth weight <2.5kg).

In the present study 21% babies had APGAR score 6 or less, while 79% had score between 7-10 at 1 minute. Whereas APGAR score at 5 minutes showed that 11% had score 6 or less & 89% had APGAR score 7-10. While sable et al(2015)<sup>11</sup> found similar results with 52.60% of babies having 1 min APGAR score 6 or less & 9.83% babies had APGAR score 6 or less at 5 min.

In present study, 54 (54%) babies were admitted to NICU due to associated morbidity. K Narsariya et al(2017)<sup>13</sup> in their study observed that 20.59% of babies required management in NICU immediately after birth. Similar results were obtained by Sable et al (2015)<sup>11</sup> with NICU admission rate being 14.36%.

## CONCLUSION

Analyzing 100 referred cases, it is found that wide spectrum of complicated obstetric cases were referred to our tertiary care hospital. Hypertensive disorders (preeclampsia, Eclampsia), previous caesarean section and hemorrhage (ante-partum ) have been the commonest cause of referral which need to be given special attention. Poor socio economic status, lack of human resources and facilities at many sub centres are the pitfalls in implementation and utilisation of community obstetric care services.

The health care workers at primary centres needs to be trained properly and their main contribution should be for health promotion rather than disease intervention especially in complicated cases. Timely referrals with detailed referral slips imparting information regarding treatment received at the referring hospital might help in early and optimal management, so as to reduce maternal and perinatal mortality.

Access to high-quality health care that people need without suffering financial hardship is a human right and this can be made possible by strengthening the peripheral health services ,the referral system and increasing the number of tertiary care centres which provide good maternal and neonatal care.

There is a need to motivate government as well as private sector to play active role in saving the lives of mothers and their babies. Health education and awareness by mass media and non- government organizations can improve the health and social status of women in our country.

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