

Study of Fetomaternal Outcome in Referral Cases in a Tertiary Care Hospital

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Abstract:

Background: Pregnancy is not a disease & pregnancy related, morbidity and mortality are preventable. An effective and efficient referred system is important to facilitate efficient transfer of patients to next level of care, particularly in case of obstetrics emergencies. Present study was aimed to study various cause of obstetric referral, their management and outcome of mother and baby. Also mode of transport, delay in transport, referral details of referred patients are discussed in this study.

Aims and Objectives: To evaluate the fetomaternal outcome among referred obstetric cases to Sir. T. hospital, Bhavnagar.

Materials and Methods: present study conducted in department of obstetrics and gynecology, Sir .T. Hospital, Bhavnagar. All referred ANC cases to our tertiary care institute of > 20weeks of pregnancy and all intrapartum referrals are included in study from January 2022 to January 2023. Referred without referral slip, all postpartum referrals and Private hospital referrals are excluded from study.

Results and Observations: In this study, 50% are intrapartum referrals and 50% are antepartum referrals. Previous caesarean sections were the cause of referral in 16.3% of cases in the present study. Maximum were referred for preeclampsia (27.9%) followed by meconium stained liquor (14.1%) followed by anemia (15.9%) followed by post term pregnancy (12). 15.9% of cases were referred due to non-availability of blood. In the present study, it can be concluded that the rate of caesarean section is substantially high in referred cases. 18% of the total referred cases were managed conservatively and discharged. In the present study, 96.9 % were live births. Because of such a improved and well managed referral system and many other government schemes for maternal health, India is on verge of achieving the sustainable development goals SDG of 70/lakh live births by 2030.

Conclusion: It is concluded that referral system proved to be efficient in proper diagnosis, management of PIH, early referral, to assess if operative interference needed or not and making timely reach to tertiary care hospital.

Keywords: Referral System Efficiency, Fetal Outcome, Maternal Outcome.

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Introduction

In terms of health, World Health Organization (WHO) states that, "Referral is a process in which a health worker at one level of the health system, having insufficient resources (drugs, equipment, skills) to manage a clinical condition, seeks the help of a better or differently resourced facility at the same or higher level to assist in." [1].

The obligation for having a sound referral system is important, to fulfill the existing gaps in Health Infrastructure. As there are only less than 20% of Sub Centre, Primary Health Centers & Community Health Centers that meet Indian Public Health

Standards; 80% of them fall short of Gynecologists, Pediatricians and Physicians [2].

Likewise, in India, based on the need and availability of resources the patients are referred from lower to higher level [Figure 1], but at ground level, different scenarios are observed. In reality, here, anyone can go to any level of healthcare facility for getting treatment irrespective of seriousness of his/her illness. This is mainly due to non-existent of any written policy for referral systems in India. Here existing referral system is not streamlined at all.

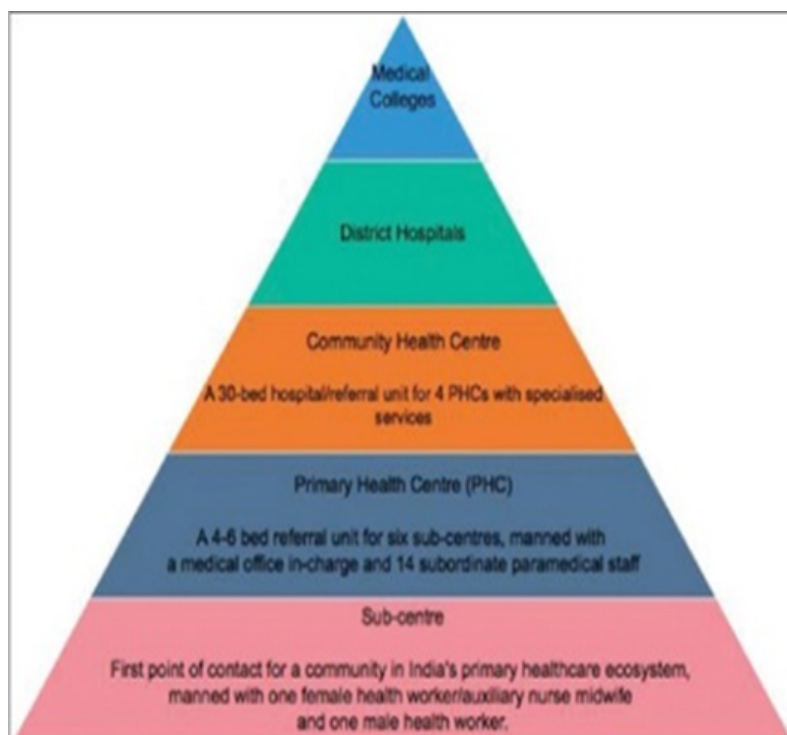


Figure 1: Referral system in India[1]

Indirectly, this exerts considerable amount of burden on higher level facilities as there is large number of Outpatient departments (OPDs) with patients of minor illness that can be managed at primary level. Health care system of India is plagued by: overpopulation, lack of expert clinicians, skewed distribution of physicians, lack of motivation among existing health care personnel and an ineffective referral mechanism .[1]

Materials and Methods:

Study type: prospective observational study.

Study size: All pregnant females in antepartum (>20 weeks) and intrapartum phase of pregnancy referred to the emergency obstetric ward.

Study period: 12 months

Study population: All pregnant females in antepartum (>20 weeks) and intrapartum phase of pregnancy referred to the emergency ward in Gopinath maternity home, Sir T hospital, Bhavnagar from primary health center/community health center.

Study site: Sir. T. Hospital, Bhavnagar.

Method: present study conducted in department of obstetrics and gynecology, Sir. T. Hospital, Bhavnagar.

- An Informed consent is taken.
- Patients are selected according to inclusion and exclusion criteria.
- Detail history, general examination and pelvic examination done.
- Cause of referral, maternal and foetal outcome is noted.

Selection criteria

Inclusion:

- All referred ANC cases to our tertiary care institute of > 20weeks of pregnancy
- All intrapartum referrals.

Exclusion:

- Referred without referral slip.
- All postpartum referrals.
- Private hospital referrals

Results and Observations:

Total 200 referred patients were studied .the data were analyzed and results given. In this study, out of 200 patients,(49%) were primigravida, multigravidas were (45%) and grand multigravidas were (6%)[Figure 2]. Out of total 200 patients, (50%) patients were referred in antepartum phase of pregnancy (> 20 weeks) and (50%) were referred intrapartum.

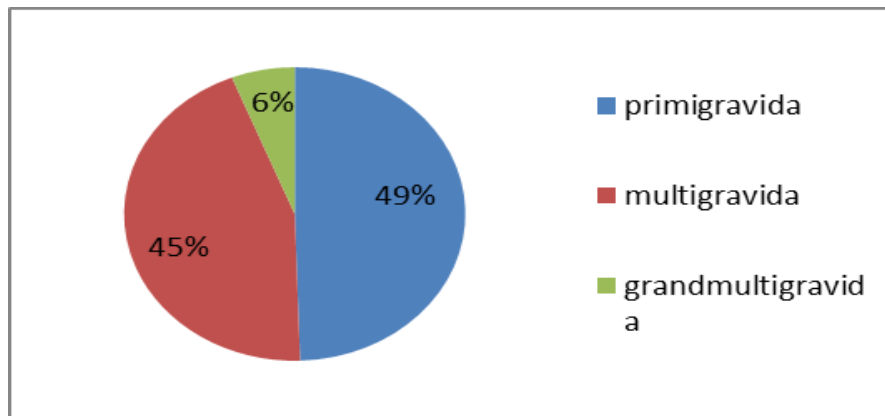


Figure 2: proportion of gravidity of referred patient. (n=200)

Out of 200 referred patients, majority (50.5%) were between 38 to 40+6 weeks followed by 35 to 37+6 weeks (24.5%) [Table 1]. Majority cause of referral were previous c section 16.3% as operative and blood transfusion facilities are not available for emergency situations followed by cases with hypertensive disorder were 13.8%.[Table 2]

Table 1: proportion of gestational age of referred patients

Weeks of gestation	No of cases	%
20 ⁺¹ – 28 weeks	08	4%
29 ⁺¹ – 34 weeks	39	19.5%
35 ⁺¹ – 37 weeks	49	24.5%
38 ⁺¹ – 40 weeks	101	50.5%
≥ 41 weeks	03	1.5%
Total	200	100%

Table 2: Proportion of patients with antepartum cause of referral

Antepartum cause of referral	No. of cases	%
Previous C section	17	16.3%
Hypertensive disorder	14	13.8%
Post term	12	11.88%
Preterm labour	11	10.8%
Anaemia	08	7.9%
IUGR	06	5.9%
Oligohydramnions	05	4.9%
IUFD	05	4.9%
Twins	04	3.9%
Co morbid condition	04	3.9%
Placental abnormality	04	3.9%
Antepartum haemorrhage	03	2.9%
CPD	02	1.9%
Poly hydramnios	02	1.9%
Malpresentation	01	0.99%
Others	03	2.9%

(IUGR intrauterine growth restriction, IUFD intrauterine fetal death, CPD cephalopelvic disproportion)

Out of 99 intrapartum referrals, maximum were referred for better management of active labour 14.14%, Preeclampsia 14.14% and meconium stained liquor 14.14% Followed by prolonged latent phase 13.13% PROM 11% and anaemia 8%. Other causes are NPOL, obstructed labour, foetal distress, hand prolapse, placenta previa, abruption placenta, Malpresentation and cord prolapse.[table 3]

Table 3: Proportion of intrapartum causes of referral (n= 99)

Intrapartum cause of referral	No. of cases	%
active labour pain	14	14.14%
Preeclampsia	14	14.14%
MSL	14	14.14%

Prolonged latent phase	13	13.13%
PROM	11	11.11%
Anaemia	08	8.08%
Fetal distress	05	5.05%
NPOL	05	5.05%
Malpresentation	04	4.04%
Obstructed labour	03	3.03%
Hand prolapse	03	3.03%
Placenta previa	02	2.02%
Cord prolapse	02	2.02%
Abruption placenta	01	0.99%

(MSL-meconium stained liquor, PROM-premature rupture of membrane, NPOL-non progress of labour)
Out 200 patients, 166 patients required operative interference or delivery which was not possible at periphery. Thus patient outcome improved due to their referral. [Table 4]

Table: 4 Management of referred patient. (n=200)

Management	Number	%
Conservative management	34	18%
Operative interference/delivery	166	83%

Out of 200 referred patients, 56% were delivered by normal vaginal delivery and 43% patients were delivered by C-section. [Table 5]. 21(10.5%) were required HDU admission.

This indicates the importance of obstetric ICU at tertiary care hospital. Maximum patients developed anemia so needed blood transfusion (22%) fol-

lowed by urinary tract infection (15%).Post-partum hemorrhage occurred in 3.5% patients.

Convulsion, septicemia, shock and DIC occurred in 2% of patients respectively while surgical injury occurred in 4% of patients. MODS occurred in 1.5% of patients. Mortality occurred in 2% of patients.

Table 5: Proportion of mode of delivery in referred patients (LSCS - lower segment C-section)

Mode of delivery	No.	%
Normal vaginal delivery	93	56.02%
LSCS	71	42.77%
Laparotomy for rupture uterus	00	00
Hysterotomy	02	1.2%
Obstetric hysterectomy	00	00

Out of total referred patients, 194(97%) were discharged healthy from hospital while 4 (2%) get expired and 2(1%) was shifted to other speciality for jaundice, such as medicine CCU and ICU of our hospital.

Table 6: proportion of maternal complications in referred obstetric patients

Maternal complication	No.	%
Blood transfusion	44	22%
UTI	30	15%
PPH	22	11%
Surgical injury	8	4%
Prolonged catheterization	6	3%
Convulsion	4	2%
DIC	4	2%
Mortality	4	2%
Shock	4	2%
Wound gap	3	1.50%
MODS	3	1.50%
Septicemia	2	1%
Jaundice	1	0.50%
Anesthetic complication	0	0
ARF	0	0
CRF	0	0
Others	6	3%

(UTI-urinary tract infection, PPH-postpartum hemorrhage, DIC-disseminated intravascular coagulation, MODS-multiorgan dysfunction syndrome, ARF-acute renal failure)

Out of 200 patients, 184(92%) mothers have healthy outcome. 12 (6%) mothers become morbidly sick. Mortality occurred in 4 (2%) cases.

Out of total referred patients, 60.5% patients have delivered a full-term babies, 60 % babies are mother side. 9 % babies were preterm and 7% have

NICU admission. 2.5 % were delivered IUFD which were referred for IUFD as antenatal cause of referral [Table 7].

Out of total NICU admission of referred obstetric patient, 50 % were low birth weight which were timely admitted to NICU and managed.

Table: 7 proportion of foetal outcome in referred cases

Foetal outcome	No.	%
Full-term	121	60.50%
Mother side	120	60%
Preterm	18	9%
NICU admission	14	7%
IUFD	5	2.50%
Still birth	0	0

(NICU-neonatal intensive care unit, IUFD-intrauterine fetal death)

Out of total patients, 32(16%) of patients has to travel more than 50 kilometer distance before reaching to hospital and were belonging from Palitana, Gariyadhar, Botad and Rajula areas nearby Bhavnagar district.

Majority of patients, 98 (49%) were referred from 20 to 50 kilometers distance. 54(27%) were referred from less than 20 kilometers. Out of total patients, 194(97%) were referred timely and thus managed timely at tertiary care hospital. While 6(3%) patients were having delay in referring to higher centre.

Out 6 patients with delayed referral, 5 patients were having delay in decision taking by relative. And only 1 patient was having delay in transportation. This indicates that government transportation system like 108 and PHC ambulances is adequately efficient in work. A delay in reaching to tertiary care centre is considered when the referral has taken more duration to travel the distance than actual duration to travel the same distance. Out of

total referred patients, 193 (96.5%) patients were safely referred in ambulance.

Out of 200 referrals, majority are true*referrals 186(93%). Least is false* referrals 14(7%). (*True referrals are those whose cause of referral is confirmed on reaching tertiary care hospital.*False referrals are those whose causes of referral in referral slip are not same/ not confirmed on reaching tertiary care hospital.) Out 14 false referrals, 8(57.1%) were referred on holidays. This shows that false referrals were more on holidays may be due to absence of experienced staff on these days.

In present study, 17(8.5%) patients were become near miss cases. Near miss case is defined as women who experienced and survived a severe acute life threatening condition during pregnancy, child birth or postpartum. Out of 4 mortality cases, first 2 were not having direct obstetric cause of maternal death. But last 2 cases seem to be preventable as they are complications of PIH if they were diagnosed and managed early.[Table 7]

Table 7: proportion of causes of maternal mortality

Causes of maternal mortality	No.	%
Moderate anemia + sepsis + acute respiratory distress syndrome + clinically COVID pneumonia	1	0.50%
Septicemia + electrolyte imbalance + cryptococcal meningitis.	1	0.50%
HELLP syndrome + pulmonary edema +severe pre eclampsia + anemia	1	0.50%
Cerebral hypoxia+ antepartum eclampsia + acute liver injury.	1	0.50%
Total	4	2%

Discussion

Obstetric complications are unpredictable and may prove fatal if appropriate treatment is not provided within a short window of time. An effective and efficient referred system is important to facilitate efficient transfer of patients to next level of care, particularly in case of obstetrics emergencies.

Despite the importance of an effective referral system, limited studies have analyzed the functioning and quality of referral system in India.

[1] Gupta PR et al found 52.17% patients were primigravida , Prakriti Goswami et al found 47% patients were primigravida , Morsheda Banu et al had found that 50% of women were primigravida, which is comparable to the 49% primigravida cases found in the present study. [3][4][5]

In this study, 50% are intrapartum referrals and 50% are antepartum referrals. Similar results are found by Prakriti Goswami et al where 56%, 30% and 14% of cases were referred in intrapartum,

antepartum, postpartum period respectively and also by Devineni K et al in their "Study of spectrum of referral pattern at a tertiary teaching hospital toward better obstetric care"[4][6]

Causes of Referral

Previous caesarean sections were the cause of referral in 16.3% of cases in the present study which is similar to, Khatoon A et al (15%) and Gupta PR et al (7.62%). The patients with previous caesarean section are referred to higher centres from PHC/CHC due to the unavailability of operation theatre, gynaecologist, anaesthesiologists, trained staff or basic infrastructure deficit.[7][3]

Patel HC et al in their study found that causes of referral were preeclampsia (16%) and meconium stained liquor (5%). Sabale et al in their study found that preeclampsia and related conditions were a major indication for referral (25.79%) [2]. Rathi Charu et al noted that a majority of the cases were referred for preeclampsia and related conditions (26%), preterm labour (26%) and medical disorders complicating pregnancy (21%). In present study, maximum referred for preeclampsia (27.9%) followed by meconium stained liquor (14.1%) followed by anemia (15.9%) followed by post term pregnancy (12%).[8][9][10]

In the present study, 15.9% of cases were referred due to non-availability of blood; this can be compared to the study conducted by Goswami P et al where 16.87% of the cases were referred for the same reason. Government should take measures to improve health infrastructure facilities, make provisions for developing new blood banks and appoint trained gynecologists in the peripheries to reduce the burden on tertiary centers. [4]

Maternal Outcome

Out of the 200 cases who delivered at our institute majority of the babies were delivered 56.5% delivered normally, while 42.7% underwent caesarean section. Similar results were obtained by Gupta PR et al where 69.48% of the patients underwent vaginal delivery and 22.75% of the patients had LSCS. In the present study, it can be concluded that the rate of caesarean section is substantially high in referred cases [3]. In present study, rate of caesarean section were high because ours was a tertiary care government hospital and many patients referred were those who required LSCS because of economic constraint.

18% of the total referred cases were managed conservatively and discharged. This rate is similar to the study conducted by Gupta PR et al (7.76%) [3] Poornima M et al (11%) [11], Goswami P et al (24%) [4] Here arises the concept of day care management of referral cases at tertiary care institute which might be helpful in reduction of burden of tertiary care institute.

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Out 200 patients, mortality rate is 2% in present study. Maternal complication requiring blood transfusion where 22%, postpartum hemorrhage was 11%, urinary tract infection was 15%, surgical injury 4%, convulsion, DIC and shock in 2% patients. Majority (97%) of patients get discharged.

Neonatal Outcome

Khatoon A et al had in their study reported 87% live births, 13% still births, 26.5% preterm births [7] Rathi Charu et al in her study found that 90% were live births and 9% were still births [10]. Poornima M et al in her study reported 91% live births and 9% still births [11]. In the present study, 96.9 % were live births. The neonatal death rate is 2.5% which is similar to the neonatal death rate in study conducted by Poornima M et al (8%) [11], Sabale U et al (10.23%) [9], Gupta PR et al (4.43%) [3].

Distance of Referral and Delay in Referral

In the present study, 3% patient reached late to our centre due to reasons such as delay in seeking care (delayed decision-making 2.5%) and delay in reaching appropriate health facility (delay in transportation 0.5% and . This is because of the effective implementation and availability of emergency ambulance service 108 throughout the Gujarat. The percentage of delayed referral cases in this study were similar to the study performed by Gupta et al.[3] who reported that 76% of the cases reached within 8 h of referral and only 5.58% were delayed referrals (>12 h).

Because of such a improved and well managed referral system and many other government schemes for maternal health, India is on verge of achieving the sustainable development goals SDG of 70/lakh live births by 2030[12]

Conclusion

From this study, it is concluded that referral system proved to be efficient in proper diagnosis, management of PIH, early referral, to assess if operative interference needed or not and making timely reach to tertiary care hospital. This shows that patient requiring conservative management were managed efficiently in periphery which prevents unnecessary burden at tertiary care hospital. Childbirth is a normal physiologic process, but emergencies can arise anytime. The present study has shown that proper antenatal and intranatal care at the periphery level and timely referral is responsible to save mother and baby

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