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Original Research Article

## Study of fetomaternal outcome in HIV positive pregnant female at a tertiary health center in South Gujarat

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### ABSTRACT

**Background:** Prenatal identification of HIV infected women is crucial for delivery and optimal care to both mother and fetus. Prevention of parent-to-child transmission has been the major tool to identify HIV-infected pregnant women by voluntary counselling and testing for HIV and provide antiretroviral drug prophylaxis to them during delivery and then to their newborn infants. Aim and objective was to study the fetomaternal outcome of HIV Positive antenatal patients.

**Methods:** This was simple descriptive study which was conducted between January 2017 to June 2019 with 18 months follow-up suggestive of 40 patients were having HIV positive among 9015 deliveries. Thorough examination, investigations and treatment given according to NACO guidelines and fetomaternal outcome were noted in all cases.

**Results:** In present study, prevalence of HIV Positive pregnant women was 0.44%. Out of 40 patients, 5 patients were diagnosed with TB. 55% cases were diagnosed with HIV during ANC examination. 22 (55%) patients were having CD4 count >500 and 1 (2.5%) patient having low CD4 count <200. 32 (80%) patients delivered vaginally and 8 (20%) underwent LSCS. 8 (20%) of babies were admitted to NICU, 3 expired and 37 babies tested negative, 3 losses to follow-up and 34 tested negatives at 18months.

**Conclusions:** Mother-to-child transmission is the predominant way children become infected with human immunodeficiency virus worldwide. Good antenatal care and multidisciplinary approach to HIV-infected women can have good pregnancy outcome and early prophylaxis to the baby leads to decreased incidence of disease in the community.

**Keywords:** HIV Positive, PPTCT, CD4 count, ART

### INTRODUCTION

HIV infection is a global epidemic that now affects more than 38 million people worldwide. Vertical transmission of HIV is the 3rd most common way for transmission of HIV.<sup>1</sup> Universal screening of all pregnant women is the most crucial for identification of HIV infected pregnant women. Antiretroviral drug prophylaxis has dramatically reduced fetomaternal transmission.<sup>2,3</sup> Prenatal

identification of HIV infected women is crucial to the delivery of optimal care to both mother and foetus. Universal screening of all pregnant women is cost effective and has clearly demonstrated a reduction in HIV-1 maternal fetal transmission even in low prevalence settings.<sup>4</sup> In pregnancy, immune function is suppressed in both HIV- infected and uninfected women.<sup>5</sup> Identification of HIV infection during pregnancy allows the infected women to make an informed decision about continuing the

pregnancy and about interventions to decrease the risk of mother to child transmission. Other benefits include the appropriate management of the infected woman and the opportunity to identify infected partners or to decrease the risk of transmission to uninfected partners.

**Aim and objectives**

Aim of the current study was to evaluate fetomaternal outcome in case of pregnancy and HIV and objectives were; to study the prevalence of seropositive deliveries in our tertiary care hospital, to study the demographics profile in seropositive mothers, to study the antenatal, intra partum and postpartum period in seropositive mothers and to study the neonatal outcome and HIV status in infants of HIV positive mothers.

**METHODS**

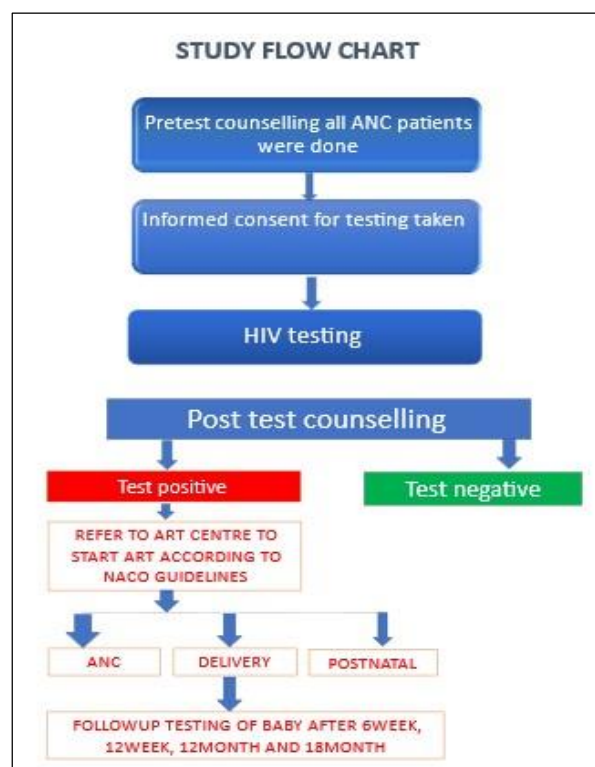
This study was simple descriptive analytic study conducted in the department of Obstetrics and gynaecology, SMIMER, Surat from January 2017 to June 2019 with sample size of 40 patients. The sampling technique was purposive.

**Inclusion criteria**

Inclusion criteria were; ANC women attending the OPD either HIV positive previously diagnosed or diagnosed during study and women who give consent for the study.

**Exclusion criteria**

Exclusion criteria were; HIV positive women who underwent MTP or had abortion, Women who refuse to participate in the study and any patient who has a loss to follow up before delivery or deliver outside hospital. The study was designed to enroll HIV positive pregnant women during ANC and followed prospectively till the delivery and thereafter for testing of infants for HIV. The enrollment of study population was done at ANC O.P.D of Department of Obstetrics and gynaecology at our Institute. The study period was 18 months. During the antenatal care at our outpatient department all women attending the antenatal clinic were counselled regarding the HIV infection with special reference to the possibility of HIV transmission from the parents to their children. After taking informed consent, the antenatal patients were tested for their HIV status. Those who were found to be seropositive for HIV underwent confidential post-test information and counselling regarding the vertical transmission and importance of their delivery in the PPTCT centers. HIV infected pregnant women were initiated on the new triple drug TLE regimen once they registered. Those mothers already on ART for their own health were continued on the same regimen. ARV/ART was continued throughout ANC, during labor/ delivery, during breastfeeding and lifelong thereafter. After delivery first dose of Nevirapine was given to Infant between 6-12 hours of delivery and continued for 6 wks.



**Figure 1: Study flow chart.**

A detailed proforma was prepared to obtain the maternal data during antenatal course, delivery of the patient and testing of the infant. Quantitative and qualitative data were corroborated at the end of the study period and the findings were used to explore the fetomaternal outcome & the efficacy of triple drug regimen for PPTCT in seropositive mothers.

**RESULTS**

Total deliveries during 12 months study period were 9015. No. of seropositive patient who give consent were 40, No. of patients referred from art centre were 18, No. of patients detected seropositive in our PPTCT programme were 22 and prevalence was 0.44. Out of 40 patients studied, 18 patients were pre-conceptionally diagnosed as seropositive. 22 patients were detected to be seropositive during present ANC.

**Table 1: Prevalence of HIV positive patients.**

Parameters	Observations
Study period	October 2018 to October 2019+ 18 months follow-up
Total number of deliveries	9015
Total number of HIV detected mother	22
Seropositive mother referred	18
Prevalence	0.44

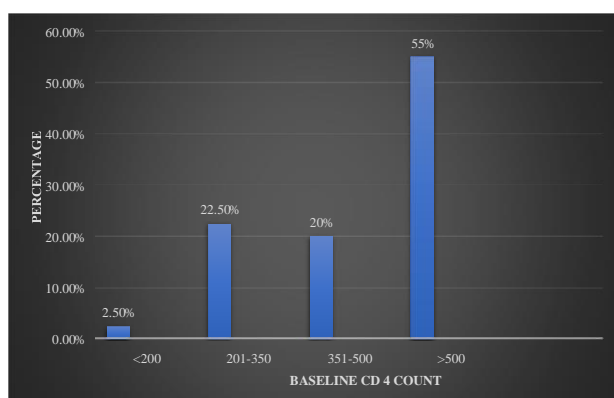
**Table 2: History of TB.**

History of TB	N	%
<b>Positive history</b>	5	12.5
<b>Negative history</b>	35	87.5
<b>Total</b>	40	100

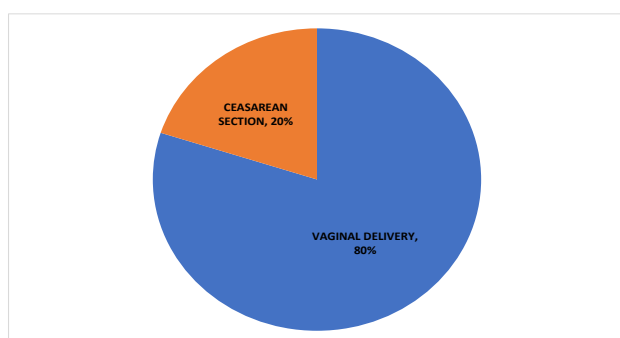
**Table 3: Time of HIV detected in patients.**

Time of detection	N	%
<b>Pre-conception</b>	18	45
<b>Detected in present pregnancy</b>	22	55
<b>Total</b>	40	100

In this study, out of 40 patients, 22 patients had CD4 counts above 500, 8 patients had CD4 counts in the range of 350-500, 9 patients had CD4 counts in the range of 201-350 and 1 patients had CD4 counts less than 200. Total 8 (20%) patients received triple-drug treatment for less than 4 months, 9 (22.50%) patients received treatments for 5 to 7 months, 18 (45%) patients received treatments for 8-9 months and 5 (12.5%) patients received treatments for more than 9 months. Out of 40 deliveries, 32 patients were delivered vaginally whereas 8 patients were delivered by caesarean section for obstetric indications.



**Figure 2: Baseline CD4 count at time of admission.**



**Figure 3: Mode of delivery.**

Out of 40 deliveries, there were 37 live births and 3 neonatal deaths occurred. Out of 3 neonatal death 2 were due to premature delivery and 1 due to MSL & respiratory

distress. Out of 40 babies delivered, 37 babies had successful outcome and went home with mother. Out of total 40 neonatal birth 92.5% were tested negative at 6 weeks testing and 7.5% expired. As per our study, 34 were tested negative at 18 months and 3 neonates were loss to follow-up.

**DISCUSSION**

Prevalence of HIV positive pregnant women in 2019 in India was 0.24% while in Gujarat was 0.39%. In our study total number of deliveries conducted at our hospital during the period of our study was 9015 and the number of HIV positive deliveries was 40. Hence the HIV detection rate in our PPTCT programme is 0.44% which was similar to study by Goswami et al studying the profile of HIV positive mothers delivered, it was found that majority of their patients (42.71%) were in the age group of 25-34 years.<sup>6</sup>

Most TB patients registered by the RNTCP were receiving HIV screening and 90% of HIV positive TB patients were receiving antiretroviral treatment.<sup>7</sup> As shown in table 2 H/O Koch's was present in 5 patients out of 40 which contribute 12.5% of total seropositive. TB and HIV are inextricably linked.

**Table 4: Duration of antiretroviral treatment during pregnancy.**

Duration of antiretroviral treatment (months)	N	%
<b>1-4</b>	8	20
<b>5-7</b>	9	22.5
<b>8-9</b>	18	45
<b>&gt;9</b>	5	12.5
<b>Total</b>	40	100

**Table 5: Perinatal outcome.**

Perinatal outcome	N	%
<b>Live birth</b>	37	92.5
<b>Neonatal death</b>	3	7.5
<b>Total</b>	40	100

Maternal TB with HIV co-infection can also pose a serious risk to Seropositive mothers Therefore, it is critical that all HIV-infected pregnant women are evaluated for symptoms of TB disease using appropriate diagnostic testing and that multidrug TB treatment is initiated if active disease is identified.

**Table 6: Neonate outcome.**

Neonate outcome	N
<b>Tested negative in 6 weeks</b>	37
<b>NICU admission</b>	8
<b>Expired</b>	3
<b>Total neonatal birth</b>	40

**Table 7: Follow-up testing at 18 months.**

Outcome	N
Tested Negative	34
Tested Positive	0

Since antenatal clinics are a woman's first point of contact with the health care system, HIV counselling and testing integrated in such clinics is the main reason for detection of positive status in women who would not otherwise get tested. It was seen in our study that, 45% patients were preconceptionally diagnosed as seropositive and 55% were detected to be seropositive during present pregnancy this in concordance with study done Ilaria et al in 2008 Italy, which showed that 43.1% patients were detected seropositive during present pregnancy whereas 53.9% were detected preconceptionally.<sup>8</sup> CD4 count is used to assess the immune system of patients and it also monitors the effectiveness of the Antiretroviral treatment.<sup>9</sup> In our study, we observed that 9 patients (22.5%) had CD4 counts in the range of 201-350 and 1 patient (2.5%) had CD4 counts less than 200. In ANRS French Perinatal Cohort, 10.2% patients reported CD4 count < 200, 22.2% between 200-350 and 67.7% >350.<sup>10</sup> In the study by Ilaria et al regarding maternal characteristics in pregnancy in Seropositive women in Brescia, Italy, it was found that 2.8% of the study population had CD4 counts 500.<sup>8</sup> As per Mayer Letal study conducted in South Africa in 2015, 14.34% patients had CD4 count 500.<sup>11</sup> This was similar to our study. Women with CD4 counts less than 350 are started on ART and when such women conceive and ART is continued the risk of transmission to fetus becomes minimal. Since majority of patients in our study had CD4 counts >500, it shows the improved clinical outcomes in Seropositive mothers. In our study we found that a lot of patients register in the second trimester of pregnancy. 20% patients received triple-drug treatment for less than 4 months, 22.50% patients received treatments for 5 to 7 months, 45% patients received treatments for 8-9 months and 12.5% patients received treatments for more than 9 months. This is probably due to factors such as late recognition of pregnancy and the habit of concealing the pregnant status of the woman during the first trimester as per societal norms. Concealing the pregnant status of the woman during the first trimester as per societal norms. Hence, there is a need that Seropositive women be counselled regarding early registration during pregnancy so that ARV can be initiated early so that patients receive it for a longer duration during their pregnancy. In the ANRS French Perinatal Cohort Study, it was found that 21.29% of patients received up to 5 months of ART/ARV, 21.33% of patients received 6-7 months of therapy and 57.38% of patients received more than 7 months of ART/ARV.<sup>10,11</sup>

Total 80% patients were delivered vaginally whereas only 20% patients underwent caesarean section for obstetric indications. As can be seen in the study by Thorne et al in 2006 in Ukraine, it was found that 63.56% of patients delivered vaginally whereas 36.44% patients delivered via

Caesarean Section.<sup>12</sup> However, in the era of Triple drug therapy and HAART, Vaginal Birth has once more become the safer option for Seropositive women to deliver, with minimal risk of transmission. Out of 40 babies delivered, 37 babies had successful outcome and went home with mother. HIV-infected women, particularly those with advanced disease, may have higher rates of pregnancy loss (miscarriage and stillbirth) and neonatal mortality than uninfected women. More advanced maternal HIV disease is associated with adverse pregnancy outcomes.

In studies conducted in UK and Ireland it was observed that the rate of MTCT declined from 2.1% in 2000-2001 to 0.46% in 2010-2011 due to the widespread use of ART which was similar to our study. Excess neonatal mortality in HIV-infected women is not primarily explained by infant HIV infection but is strongly associated with low birth weight and prematurity.<sup>13</sup> Risk of HIV transmission through PPTCT with no ART and breastfeeding is 30-45% and ART with breastfeeding is only 2%.<sup>14</sup> A Study conducted by Kouanda et al concluded that the rate of vertical transmission was 0% and 4.6% with single dose therapy which was similar to our study that is 0%.<sup>15</sup> This shows that vertical transmission is decreased day by day with use of ART.

### Limitations

Lack of outreach workers increased the poor follow-up of seropositive subjects and their babies antenatally and postnatally and due to limited period of study. Viral load is not included in this study.

### CONCLUSION

Good antenatal care and multidisciplinary approach to HIV-infected women can have good pregnancy outcome and early prophylaxis to the baby can reduce the vertical transmission of HIV to neonate by less than 2 percent. Primary prevention of HIV infection in parents-to-be, early identification of seropositivity in pregnant women, prevention of mother to child transmission of HIV by appropriate antiretroviral therapy, special interventions in maternal management during labor, appropriate care and follow up of the newborn, all play an important role.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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