International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Vaghela NM et al. Int J Reprod Contracept Obstet Gynecol. 2026 Apr;15(4):1242-1246
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20260880

Original Research Article

Pregnancy outcomes in HIV-infected women

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Received: 25 January 2026
Revised: 23 February 2026
Accepted: 25 February 2026

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ABSTRACT

Background: HIV infection during pregnancy remains a significant public health concern in India despite a declining prevalence. Mother-to-child transmission (MTCT) continues to be the primary source of pediatric HIV infection. Early identification of HIV-positive pregnant women and timely initiation of antiretroviral therapy (ART) under the Prevention of Parent-to-Child Transmission (PPTCT) programme are critical for reducing MTCT and improving maternal and neonatal outcomes.

Methods: A retrospective observational study was conducted at SVP Hospital and SCL Hospital from January 2015 to December 2024. Fifty HIV-seropositive pregnant women attending antenatal care or presenting in labor and receiving ART were included. HIV testing, counseling, ART initiation, and follow-up were performed in accordance with National AIDS Control Organization (NACO) guidelines. Maternal demographics, obstetric complications, CD4 counts, mode of delivery, and neonatal outcomes, including HIV status at 18 months, were analyzed.

Results: Among the 50 women, 28% were newly diagnosed during labor, while 72% were known HIV-positive cases. Most women were aged 25-30 years (44%) and were primigravida (44%). Maternal complications included anemia (40%), fetal growth restriction (26%), pulmonary tuberculosis (14%), and preterm delivery (16%). The live birth rate was 92%. Cesarean section was performed in 84.7% of cases for obstetric indications. CD4 counts were >200 cells/mm^3 in 98% of women. Nevirapine prophylaxis was administered to all live-born infants. Of the 46 infants tested at 18 months, only one (1%) was HIV-positive. Low birth weight was observed in 32.6% of neonates, and neonatal mortality was 2.2%.

Conclusions: Effective implementation of PPTCT services, including universal antenatal screening, early ART initiation, institutional delivery, neonatal prophylaxis, and follow-up per NACO guidelines, significantly reduces MTCT of HIV. Strengthening early antenatal registration and ART adherence can further improve outcomes.

Keywords: Antiretroviral therapy, HIV in pregnancy, Mother-to-child transmission, NACO, PPTCT

INTRODUCTION

Human immunodeficiency virus (HIV) is a blood-borne infection that is initially asymptomatic but involves a gradual compromise of immune function, eventually leading to acquired immunodeficiency syndrome (aids), and the time between HIV infection and development of aids ranges from a few months to 17 years in untreated patients. The prevalence of HIV infection among pregnant women in India is gradually coming down and prevalence in 2023 was around 0.7% but still India is one of the top 10 countries with high prevalence of HIV among pregnant women and third largest country in HIV epidemic. Prenatal identification of HIV infected women is crucial for optimal care to both mother and fetus. Universal screening of all pregnant women is cost-effective and has clearly demonstrated a reduction in HIV and maternal to fetal transmission even in low-prevalence settings.

Mother-to-child transmission (mtct), which is also known as 'vertical transmission', accounts for the vast majority of infections in children (0-14 years). More than 90% of HIV infections among children occur through mtct. Maternal HIV infection in women who have not received antiretroviral therapy has been associated with adverse pregnancy outcomes such as low birth weight (lbw), preterm birth, small for gestational age (SGA) and stillbirth.[1] More importantly, preterm birth constitutes the world's second leading cause of death in children under five years. Hence, prevention of transmission of HIV from a woman to her fetus or newborn becomes a major goal in the care of pregnant women infected with HIV.

Who introduced a set of interrelated interventions designed to block transmission of HIV from a HIV infected mother to her child during the period of pregnancy and breastfeeding in order to prevent this.[2]

These interventions are proposed together as a single package of care known as Prevention of Mother to Child Transmission of HIV (PMTCT).[3]

METHODS

This study was a retrospective, observational study conducted in the department of obstetrics and gynecology at SVP hospital and SCL hospital for a duration of 9 years (January 2015 to December 2024). The sample size in our study was 50 patients.

Inclusion criteria

All ANC women attending the gynae OPD who turned out to be HIV seropositive and started on ART, all women are already on ART, and women who give consent for the study were included.

Exclusion criteria

Women who did not give consent to participate in the study, women who were lost to follow up, and women whose spouse did not agree to undergo HIV screening were excluded.

Detailed history was taken of all pregnant females presenting to the OPD. All patients were counselled to undergo HIV testing 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. The sample was tested for HIV antibodies as per National Aids Control Organization, India (NACO). Those who were found to be seropositive for HIV underwent confidential post-test information and counselling regarding the vertical transmission in the art center in the medicine department of our institute. They were counselled about the possibility of horizontal transmission in their partners and their spouses were asked to undergo the test too. Once they registered HIV infected pregnant women were initiated on the new triple drug TEL regimen.[4] Hospital delivery is advised for them, following universal precautions. Those mothers already on art for their own health were continued on the same regimen. ARV/ART was continued throughout antenatal care, during labor/delivery, during breastfeeding and lifelong thereafter. After delivery a detailed proforma was prepared to obtain the maternal data during antenatal course including serial cd4 count throughout pregnancy, delivery of the patient and testing of the infant. The data collected was corroborated at the end of the study period and the findings were used to determine the feto-maternal outcome. Babies of HIV sero-positive mothers were given syrup nevirapine immediately after birth and then followed according to NACO guidelines. Maternal outcome was noted in the form of mode of delivery and complications encountered while neonatal outcome was noted at the time of birth and later after 18 months according to NACO guidelines.

RESULTS

Out of 50, 28% patients were newly diagnosed during labor room testing I.E. Directly on admission at term gestation. Those who had irregular antenatal visits or were non-compliant patients (Table 1).

Table 1: HIV testing and results of antenatal mothers attending this study OPD.

Variables	Number of patients	Percentage (%)
LR positive (new)	14	28
Already positive (old)	36	72
Total positive (new or old)	50	100

They were counselled about the possibility of sexual transmission and ways to prevent it.

Table 2: Spouse test.

Variables	Number of patients	Percentage (%)
Positive	32	71.4
Negative	18	28.6
Total	50	100

The prevalence of seropositive HIV patients was more in primipara (44%) patients as compared to second (30%) and multipara (26%) patients (Table 4).

In the mode of delivery in our study, 8% of the patients had undergone MTP/abortion, 92% had delivered a live child and only 1 maternal mortality was detected due to complications of tuberculosis (Table 5).

Among all 50 seropositive patients, 40% patients had anemia, 10% patients developed HDP, 4% patients developed GDM and 2% patients developed intrahepatic cholestasis of pregnancy. 14% of patients had co-infection of TB. 16% patients delivered preterm and 26% neonates

had FGR (Table 6).

Table 3: Demographic profile of HIV sero-positive mothers (n=50).

	Variables	Number (%)
Age (years)	18-24	7 (14)
	25-30	20 (44)
	30-34	18 (36)
	>35	5 (10)
Literacy	Illiterate	15 (30)
	Primary education	20 (40)
	Secondary education	11 (36)
	Higher education	4 (8)

Table 4: Obstetric profile of HIV sero-positive mothers (n=50).

	Variables	Number (%)
Gravida	Primi	22 (44)
	Second	15 (30)
	Multi	13 (26)

Table 5: Pregnancy outcome of HIV sero-positive mothers (n=50).

	Variables	Number (%)
Delivery	Live birth	46 (92)
	MTP/abortion	4 (8)
Mode of delivery	Cesarean	39 (84.7)
	Normal	7 (15.3)
Maternal mortality (during antenatal period/HIV+ TB)		1

Table 6: Complications.

Complications (not exclusive)	Number (%)
Pulmonary TB	7 (14)
FGR	13 (26)
Anemia	20 (40)
Pre term	8 (16)
HDP	5 (10)
GDM	2 (4)
Intrahepatic cholestasis of pregnancy	1 (2)

Table 7: Baby outcome of HIV sero-positive mothers.

Variables		Number
Total babies tested at 18 months		50
HIV positive		1
HIV negative		45
Baby Death	Before HIV serology test (before 6 months)	1
	After HIV serology test	0
Nevirapine syrup given immediately after birth		46

Table 8: Baby outcome (not exclusive).

Baby outcome (not exclusive)	Number (%)
Low birth weight	15 (32.6)
Low APGAR	10 (19.6)
Required resuscitation	3 (6.5)
Required NICU Admission	10 (13)
Neonatal death	1 (2.2)

Plasma viral load at 32-34 weeks of gestation to determine the risk of HIV transmission to baby. Only 2% of the patients had cd4 count <200 cells/mm^3 (Table 9).

Table 9: Plasma viral load.

CD4 count	No. of patients (at time of diagnosis) (%)
<200 cells/mm^3	1 (2)
200-350 cells/mm^3	33 (66)
301-500 cells/mm^3	12 (24)
>500 cells/mm^3	4 (8)
Total	50 (100)

DISCUSSION

India's socio-economic status, traditional social ills, cultural myths on sexuality and a huge population of marginalized people make it extremely vulnerable to HIV/aids[5] Since the first case reported in 1986 in Chennai in south india, HIV had spread rapidly from urban to rural areas and from high-risk groups to the general population.[6] Maternal HIV transmission is the primary cause by which infants become infected.[7] Hence prevention of maternal HIV transmission is of paramount importance.

The prevalence of HIV positive pregnant women in 2022 in India was 0.22% while in Gujarat it was 0.18%. In our study we have considered a total of 50 cases. In our study, majority of the HIV positive pregnant women (44%) were in the age group of 25-30 years followed by 30-34 years (36%) giri and his colleagues found in their study of the total 50 HIV positive women (34%) were aged 18-23 years, 21 (42%) aged 24-28 years.[8,9] In our study education status among the seropositive pregnant women showed that 40% had primary education 36% had secondary education and 30% were illiterate, reasons of high prevalence in lower education level can be their ignorance about HIV infection and its mode of transmission, because they belong to low socioeconomic status whose husbands migrate to other states for work, contract the infection there and then infect their wives, in our study it is found that majority of the seropositive women were primigravida (44%) followed by second gravida (30%) and multigravida (26%). Ashtagi and his colleagues in their study observed that among the HIV-positive pregnant women attending an ANC clinic 63.83% were multigravida and 36.17% were primigravida.[10]

Tb and HIV are inextricably linked. Maternal tuberculosis

with HIV co-infection can also cause a serious risk to seropositive mothers therefore, it is crucial that all HIV-infected pregnant women are evaluated for symptoms of tuberculosis disease using appropriate diagnostic testing and that multidrug tuberculosis treatment is initiated if active disease is identified. 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 72% patients were antenatally diagnosed as seropositive.

Cd4 count is used to assess the immune system of patients and it also monitors the effectiveness of the antiretroviral treatment. In our study, we observed that (98%) had cd4 counts >250 and 2% patients had cd4 counts less than 200.

In our study 35% of the patients had cd4 count <350 were started on ART. When these women conceive and ART is continued the risk of transmission to the fetus becomes minimal.[11] Since the majority of our patients were timely started on ART after seropositive status, 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. 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. Hence, there is a need for seropositive women to 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.

Total 15.3% patients were delivered vaginally whereas only 84.7% patients underwent cesarean section. Kulkarni et al found that the mode of delivery being lscs in 53.3% of patients and vaginal delivery in 46.6% here it is to be noted that the cesarean was done solely for obstetric indications.[12]

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. Total babies tested for HIV were 46, out of which 1 (1.0%) was sero-positive for HIV. The baby was started on antiretroviral therapy. Nevirapine syrup was given to all the liveborn babies.

Out of 46 babies delivered, 40 babies had successful outcomes. Compared to uninfected women, HIV-infected women, particularly those with advanced disease may have higher rates of pregnancy loss (miscarriage and stillbirth) and neonatal mortality.[13] More advanced maternal HIV disease is associated with adverse pregnancy outcomes.

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. Risk of HIV transmission through PPTCT with no ART and breastfeeding is 30-45% and ART with breastfeeding is only 2%.[14] Appropriate antenatal screening, intervention and preventive strategies during pregnancy, delivery and breastfeeding will bring down the mother to child transmission of HIV. Therefore, it may be recommended that every pregnant woman should be screened for HIV after pretest counselling and obtaining informed consent, even though curative treatment is not available at present we can minimize, if not prevent the pediatric infection by early screening followed by short chemotherapy, safe delivery and modified infant feeding.

CONCLUSION

Pregnancy outcomes in HIV-infected women can be optimized by good antenatal care and a multidisciplinary approach. There is increased risk of pulmonary tuberculosis, FGR, HDP, GDM and anemia, which may be due to disease or ART. Early prophylaxis to the baby can reduce the vertical transmission of HIV to the neonate. Exclusive breastfeeding can be given to the baby to prevent perinatal transmission.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: The study was approved by the Institutional Ethics Committee

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Cite this article as: Vaghela NM, Patel AM, Myatra KD, Shah TN, Dabhi MP, Desai KJ. Pregnancy outcomes in HIV-infected women. Int J Reprod Contracept Obstet Gynecol 2026;15:1242-6.