

# A Case Study of Consecutive Pregnancies in a Woman with Liver Cirrhosis and Portal Hypertension

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## Abstract

*Pregnancy in women with liver cirrhosis is a high-risk one that requires multidisciplinary care. Variceal bleeding occurs in up to half of women having associated portal hypertension and confers the greatest risk. Despite advances made in the management of such cases, maternal morbidity remains high. Pregnancy is rare in women with liver cirrhosis due to reduced natural fertility rates. We report a case of two consecutive pregnancies in a woman with liver cirrhosis.-A 29-year-old primipara with hepatitis B-related liver cirrhosis with portal hypertension who had been on tenofovir for the past seven years. The first pregnancy was spontaneously conceived but the second was by assisted conception. Both pregnancies were complicated by recurrent episodes of variceal bleeding that necessitated multiple endoscopic variceal band ligation (EVBL) during pregnancy. Medical advancement has enabled women with cirrhosis to have more pregnancies with reduced maternal and perinatal morbidities. Multidisciplinary management is vital to achieving favourable pregnancy outcomes.*

**Keywords:** cirrhosis, endoscopic variceal band ligation, pregnancy, variceal bleeding

## INTRODUCTION

Hepatitis B virus (HBV) infection is prevalent in Nigeria and this chronic infection is a leading cause of liver cirrhosis worldwide (Ajuwon et al 2021, Van der Slink 2022). Formerly thought to be a rare occurrence with an incidence of 1 in 3,333 pregnancies, cirrhosis in pregnancy has now doubled in incidence in the last decade (Palatnik and Rinella 2017, Huang et al 2022). Its rarity was due to amenorrhoea and impaired fertility resulting from disruptions in the hypothalamic-pituitary-ovarian axis (Huang et al 2022). However, due to improvements in treatments of chronic liver disease and the availability of modern assisted reproductive technology, more women become pregnant with the attendant increase in maternal morbidity and mortality (Rahim 2021). Hepatitis B virus infection is the main aetiological cause (Tan et al 2024). Variceal bleeding has been reported in one-third to one-fourth of pregnant women with cirrhosis and half with portal hypertension (Rahim 2021; Stelmach et al 2020).

Pregnancy in women with liver cirrhosis is associated with increased maternal and perinatal morbidity and mortality. The risk of maternal death is increased by 80-fold largely from variceal bleeding. The risk of preterm delivery, caesarean section, preeclampsia, and small for gestational-age infants was higher in women with cirrhosis compared to non-cirrhotic women

(Van der Slink 2022). We report a case study of consecutive pregnancies in a woman with liver cirrhosis and portal hypertension.

### **CASE PRESENTATION**

A 29-year-old booked primipara with a living child and the last childbirth of six years. The index pregnancy was conceived following ovulation induction with clomiphene citrate. She booked the index pregnancy at Ahmadu Bello University Teaching Hospital, Shika at 16 weeks of gestation. She has had hepatitis B-related liver cirrhosis with portal hypertension diagnosed seven years ago and was co-managed by the gastroenterologist. She had been on tenofovir since the diagnosis. The HBsAg was positive; HBcAb was positive; AntiHBc(IgM) was positive; AntiHBsAg was 3mIU/ml; HBeAg was negative and viral load was 1,355 IU/mL (7,588 copies/mL). Doppler ultrasound scan revealed features suggestive of chronic hepatitis. The antenatal period was complicated by recurrent variceal bleeding and multiple transfusions that necessitated EVBL at 26 weeks gestational age. The rest of the pregnancy was uneventful, and she delivered a healthy baby at term via a repeat caesarean section.

The first pregnancy was spontaneously conceived. The second pregnancy was conceived by ovulation induction with clomiphene citrate as mentioned in the previous paragraph. The antenatal period was also complicated by recurrent variceal bleeding and multiple transfusions of 11 units of blood. She had EVBL at 26 weeks gestational age. She had an emergency caesarean delivery at 32 weeks due to variceal bleeding and delivered a healthy baby weighing 1.8kg.

Both babies received the HBV vaccination and the immunoglobulin. The mother was counselled on contraception, the need to continue management with the gastroenterologists, and the importance of preconception care.

### **DISCUSSION**

Pregnancy can exacerbate liver dysfunction in women with liver cirrhosis and hence is a source of anxiety for both the patient and the Obstetrician. Management of such pregnancy can be complex and challenging and thus requires specialized multidisciplinary care. The relationship between cirrhosis and pregnancy has been established. Pregnancy can cause thrombocytopenia, decrease albumin levels, and increase portal hypertension due to an elevated total blood volume, which may further worsen cirrhosis. Liver cirrhosis also increases the risk of adverse pregnancy outcomes and complications. (Tan et al, 2024, Imamoglu et al 2023, Giard et al 2016).

Complications of cirrhosis in pregnancy include increased risks of hepatic decompensation (variceal bleeding, hepatic encephalopathy, and ascites); preterm delivery; foetal growth restriction, and haemorrhage especially during labour or caesarean section. This patient experienced preterm delivery in the first pregnancy and recurrent variceal bleeding in her two pregnancies. Variceal bleeding is the most common cause of maternal mortality in women with liver cirrhosis (Ajuwon and Rahim 2021). Fortunately, recent studies have shown an improvement in the mortality rates to <20% compared to ~~older~~ previous studies reporting mortality rates of up to 50%.

Hypothalamic-pituitary axis disruption coupled with impaired hepatic metabolism of sex hormones, portosystemic shunting of weak androgens, and peripheral aromatization of androgens results in reduced fertility in women with cirrhosis (Rahim 2021). However, advances in assisted conception have enabled more women desirous of fertility to get

pregnant. This patient had ovulation induction with clomiphene citrate in the last pregnancy following a period of secondary infertility.

Early diagnosis and prompt treatment of oesophageal varices in pregnant women are of utmost importance in preventing maternal morbidity and mortality. This patient had several episodes of variceal bleeding which occurred only during pregnancy likely due to the additional stress pregnancy exerts thereby worsening the portal hypertension. This contrasts with a report from Turkey where none of the women had variceal bleeding during pregnancy in a series of 20 women (Imamoglu 2023). Variceal bleeding usually occurs in the second and third trimesters when the blood volume increase becomes significant as was seen in this patient (Ajuwon 2021, Tolunay 2020). Upper gastrointestinal endoscopies can be safely performed in pregnancy with no immediate risk to the mother or foetus and EVBL is the recommended therapy for acute variceal bleeding (Rahim 2021, Tan et al 2024), which the patient had done multiple times during her two pregnancies.

Treatment of acute bleeding from varicosities involves the achievement of maternal haemodynamic stabilization, administration of antibiotic prophylaxis, and endoscopic arrest of bleeding (Milic et al, 2020). Though not yet evidence-based, prophylactic EVBL has been proposed before pregnancy and in the second trimester (Stelmach et al 2020).

The route of delivery for women with portal hypertension has remained an area of controversy with some concerns about increased portal pressure during labour which may worsen variceal bleeding. Maternal deaths from variceal bleeding were due to variceal bleeding during labour in about 70% of cases leading to many experts recommending elective caesarean section which is also not without the risk of intraoperative haemorrhage (Ajuwon 2021). This patient had caesarean deliveries in all pregnancies without excessive intraoperative bleeding.

There are several reports of significantly increased risks for preterm delivery in pregnancies with cirrhosis (Van der Slink 2022; Rahim 2021; Stelmach 2020; Imamoglu 2023; Hagstrom 2018). Preterm deliveries occur due to the increase in maternal complications associated with cirrhosis and portal hypertension in pregnancy such as variceal bleeding and hypertensive diseases in pregnancy. Variceal bleeding led to a medically indicated delivery in the first pregnancy of this patient.

Women with chronic hepatitis B virus infection on long-term therapy with tenofovir should continue throughout pregnancy to reduce the risks of chronic hepatitis B flare and to decrease perinatal transmission risk (Badell et al 2024). This patient was continued on tenofovir throughout pregnancy.

Studies have shown that the mortality rate for pregnancies complicated by cirrhosis is rare, at less than 2%. This is due to the improvement in medical therapy and the management of pregnant women with cirrhosis. (Tolunay et al, 2020; Hagstrom et al, 2018)

## **CONCLUSION**

With medical advancements enabling women with cirrhosis to get pregnant and in the management of cirrhosis, pregnancy is not contra-indicated in these women, as was previously believed and more cases of pregnancies are likely to be seen. Multidisciplinary management is key to achieving favourable pregnancy outcomes. Preconception care remains key in optimizing the outcome of pregnant women with cirrhosis to ensure liver parameters and portal pressure are stable.

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