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CASE REPORT

Early-Onset Parkinson's Disease in a 36-Year-Old Woman with Uncomplicated Vaginal Birth: A Case Report

Frans Arvindo Irapanussa, Dhanny Primantara Johari Santoso, Zulvayanti, Aisyah Shofiatun Nisa

Department of Obstetrics and Gynecology, Hasan Sadikin General Hospital-Padjadjaran University, Bandung, Indonesia

Correspondence: Frans Arvindo Irapanussa, Department of Obstetrics and Gynecology, Hasan Sadikin General Hospital-Padjadjaran University, Pasteur 38, Bandung, Indonesia, Tel +6282115726908, Email arvindoirapanussa@gmail.com

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Background: Parkinson's disease (PD) is a chronic neurodegenerative disorder that is rare in women of reproductive age, with limited literature describing pregnancy outcomes. Clinical management during gestation requires balancing symptom control with medication safety, while delivery planning should consider both neurological and obstetric factors.

Case Illustration: A 36-year-old woman, G4P3A0, at 36–37 weeks of gestation, presented with regular uterine contractions starting two hours prior to hospital admission. She had a 4-year history of Parkinson's disease and was on regular treatment with levodopa-benserazide HCL and trihexyphenidyl. Throughout the pregnancy, she attended regular antenatal visits to both the obstetric and neurology clinics. Vaginal delivery was planned in the absence of obstetric contraindications. Physical and obstetric examinations confirmed active phase of the first stage of labor. The patient underwent oxytocin augmentation with close monitoring. She delivered spontaneously via vaginal route, giving birth to a healthy female infant weighing 2645 grams with an APGAR score of 7–8. A Pomeroy sterilization procedure was performed postpartum. The patient was discharged in good condition and continued follow-up at the neurology clinic.

Conclusion: This case demonstrates that women in their 30s with PD can achieve favorable pregnancy outcomes, including uncomplicated vaginal delivery, when managed with close interdisciplinary collaboration. Continued reporting of similar cases is needed to strengthen the evidence base and guide clinical decision-making.

Keywords: pregnancy, management, Parkinson's disease, vaginal delivery

Introduction

Parkinson's disease (PD) is a complex neurodegenerative disorder associated with dopamine deficiency, characterized by both motor and non-motor deficits.[1] Motor symptoms include tremor, muscle rigidity, bradykinesia, and postural instability, while non-motor symptoms may involve multiple organ systems, including the gastrointestinal and genitourinary tracts.[2] Parkinson's disease has a multifactorial etiology involving genetic and environmental factors, with α-synuclein aggregation, mitochondrial and lysosomal dysfunction leading to dopaminergic neuron loss in the substantia nigra and subsequent motor manifestations.[3]

Parkinson's disease represents a growing global health burden, with approximately 1.34 million incident cases reported worldwide in 2021.[4] PD is more common in the elderly, with peak prevalence between ages 85–89 and a male-to-female ratio of approximately 1.4:1.[5] However, around 5% of PD diagnoses occur in individuals under 40 years old, making pregnancy possible in women with early-onset PD.[6] The incidence of pregnancy in women with Parkinson's disease has not been well established, as the condition predominantly affects older individuals and available data are largely limited to case reports and small case series.

Some women experience changes in Parkinson's disease symptoms during pregnancy, including worsening of the "wearing-off" effect, transient worsening of chorea, gait deterioration, increased rigidity, onset of tremor, transient improvement in dexterity, slight worsening of rigidity, slowed gait, general rigidity progression, and onset of bradykinesia. Reported

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intrapartum complications include inadequate progression in labor, worsened rigidity, preeclampsia, dystocia, transient resting tremor during labor, worsened motor disability, and severe dyskinesia during labor.[6]

Pregnancy in women with PD is rarely reported, largely due to the low incidence of the disease in reproductive-age women. The rarity of Parkinson's disease in women of reproductive age contributes to limited clinical experience and evidence, which in turn impedes the development of comprehensive, evidence-based guidelines for preconception counseling, antenatal management, and delivery planning. Consequently, clinical decisions are often individualized and based on limited published experience. Nevertheless, its occurrence may become more frequent as maternal age at conception increases, and there is no current evidence suggesting that PD directly reduces fertility. Limited data on pregnancy outcomes in PD highlight the importance of reporting individual cases to inform management and counseling. This case report describes pregnancy in a woman in her 30s with PD who successfully underwent an uncomplicated vaginal delivery.

Case Description

A woman 36 years old, G4P3, at approximately 36–37 weeks of gestation, was referred from a primary health care facility with a diagnosis of a G4P3 parturient in the first stage of labor, active phase; parkinson's disease under treatment. She reported frequent, progressively stronger uterine contractions with blood-stained mucus beginning two hours prior to admission. There was no history of gross vaginal fluid leakage, and fetal movements were still perceived.

Parkinson's disease had been diagnosed four years earlier, for which she attended regular neurology follow-ups at a regional hospital. She consumed levodopa–benserazide (Levazide) and trihexyphenidyl HCl as her parkinson treatment. Mild residual tremor persisted, but symptoms were otherwise well-controlled. The neurology and obstetrics teams had jointly recommended vaginal delivery should spontaneous labor occur.

This was her fourth pregnancy; previous deliveries were term spontaneous vaginal births at a midwife clinic in 2003, 2005, and 2011, with birthweights of 4000 g, 3800 g, and 3600 g, respectively. The patient did not have a history of Parkinson's disease during her previous pregnancies. During the current pregnancy, she attended four antenatal visits at a primary health center and four with an obstetrician. Her last menstrual period was unknown. She had used depot medroxyprogesterone acetate injections between 2012 and 2016. She was a housewife, married at 18, with junior high school education; her husband was employed in the private sector and had completed senior high school.

She had gained 12 kg during pregnancy. On admission, weight was 65 kg and height 155 cm (BMI 22.06 kg/m^2). Vital signs were normal. Abdominal examination showed a convex abdomen, fundal height 31 cm, abdominal circumference 101 cm, and 3–4 contractions per 10 minutes lasting 30–40 seconds. Initial cervical assessment revealed a Bishop score of 10, with an anterior cervical position, soft consistency, 60% effacement, cervical dilatation of 4 cm, and fetal head station at 0. Cardiotocography (CTG) demonstrated a fetal heart rate ranging from 132 to 138 beats per minute, with moderate variability (>5 bpm), presence of accelerations, and absence of decelerations, consistent with a Category I CTG tracing. Vaginal examination revealed a soft, thick cervix dilated to 4–5 cm, intact membranes, and the fetal head at station 0 with transverse sagittal suture.

Ultrasound demonstrated a live singleton in cephalic presentation, consistent with 36–37 weeks' gestation, estimated fetal weight 2899 g, anterior placenta, normal amniotic fluid, and positive fetal cardiac activity. No additional abnormalities were identified. Laboratory tests (May 29, 2025) revealed hemoglobin 11.9 g/dL, hematocrit 34%, leukocytes 12,870/µL, platelets 244,000/µL, PT 12.6 seconds, aPTT 30.1 seconds, INR 0.90, and normal liver function and random blood glucose.

The patient was admitted in active labor at 36–37 weeks of gestation. On initial examination, she was alert and cooperative, with mild resting tremor of the upper extremities and slight rigidity, consistent with her baseline Parkinson's disease symptoms. She reported no worsening of motor function or new neurological complaints.

During the first stage of labor, intermittent tremor persisted but did not interfere with maternal cooperation or effective breathing techniques. There were no episodes of bradykinesia, dystonia, rigidity, or postural instability during contractions. The second stage progressed without neurological deterioration. Uterine contractions were effective, maternal expulsive efforts were adequate, and fetal heart monitoring remained reassuring. The patient delivered a healthy female neonate spontaneously, with no obstetric complications. The estimated intrapartum blood loss was approximately 50 mL. The newborn had Apgar scores of 7, 8, and 10 at 1, 5, and 10 minutes, respectively. Postpartum tubal sterilization using the Pomeroy technique was performed following vaginal delivery, without intraoperative complications. No intrapartum antibiotics were

given. Postpartum antibiotic therapy consisted of Cefadroxil 500 mg orally twice daily. Post-delivery, there was no exacerbation of tremor and maternal recovery was uneventful. Postpartum laboratory examinations were not performed. Informed consent was obtained from the patient for the publication of this case report and all relevant clinical information.

Discussion

Parkinson's disease (PD) is a progressive neurodegenerative disorder characterized by motor and non-motor symptoms, primarily affecting individuals over the age of 60.[7] Parkinson's disease is rare during the reproductive years, with only about 5% of all cases diagnosed before the age of 40.[8] It also shows a male-to-female ratio of approximately 1.4:1.[5] Consequently, reports of PD in pregnancy are scarce, and most available data come from isolated case reports or small case series. The rarity is attributed to both the low incidence of early-onset PD and the tendency for symptom onset to occur after reproductive age. This limited epidemiological evidence poses challenges for establishing standardized management protocols, and underscores the importance of documenting clinical experiences to improve understanding of maternal and fetal outcomes in this unique patient population.

Published reports indicate that women with PD may experience variable changes in symptom severity during pregnancy.[9] Early studies suggest that approximately 65% of affected women report symptom exacerbation during gestation, even when continuing their medication regimen.[9] The underlying mechanisms remain unclear but are thought to involve pregnancy-related pharmacokinetic changes, such as plasma volume expansion leading to reduced serum drug concentrations, altered gastrointestinal absorption, and increased renal clearance due to elevated glomerular filtration rate (eGFR).[10]

Survey data reveal heterogeneous motor symptom trajectories: about half of patients reported worsening symptoms, 13 noted no change, and one described improvement in motor function, mood, and energy levels across two pregnancies.[9] Among those with deterioration, 60% attributed it to dose reduction or discontinuation of medication, 25% worsened despite ongoing levodopa monotherapy, and 15% experienced worsening without any treatment adjustments.[9] These findings suggest that maintaining pre-pregnancy medication doses may help stabilize symptoms for some patients. However, data on the safety of antiparkinsonian medications during pregnancy, particularly dopaminergic and anticholinergic agents, remain limited, necessitating cautious and individualized treatment decisions.

According to current evidence, levodopa (L-DOPA) remains the most widely used and preferable pharmacological therapy for Parkinson's disease during pregnancy when treatment is required. Among available antiparkinsonian agents, L-DOPA has the greatest cumulative clinical experience in pregnant patients and has not been consistently associated with major teratogenic effects. Other agents, including dopamine agonists and MAO-B inhibitors, have more limited safety data and should therefore be considered on an individualized, case-by-case basis with close maternal and fetal monitoring.[6] Estrogen has also been proposed as a modulatory factor in PD symptom control during pregnancy.[11,12] Experimental data indicate neuroprotective effects on dopaminergic neurons via antioxidant, anti-inflammatory, and anti-apoptotic pathways.[13] Estrogen may further influence dopamine homeostasis by inhibiting catechol-O-methyltransferase (COMT) and dopamine transporters, and by enhancing tyrosine hydroxylase activity.[14] Epidemiological observations support this role, with a lower PD incidence in women than men, an increase in incidence after menopause, and reported symptom worsening during the premenstrual phase when estrogen levels decline.

Nevertheless, despite elevated estrogen levels during pregnancy, some women still experience symptom deterioration, particularly in the first and second trimesters. This paradox may be related to the predominance of estriol in pregnancy, which has a lower affinity for estrogen receptors compared with estradiol, the principal estrogen outside pregnancy.[8] In the present case, the patient's PD symptoms remained stable throughout gestation, with only mild residual tremor noted, and were considered well-controlled by the neurology team.

Currently, there is no strong evidence that PD increases the risk of pregnancy complications, infertility, or labor-related issues.[8] In a review of reported cases, the cesarean delivery rate among women with PD was about 15%, which is lower than the general cesarean rate in the United States (32%). Most women with PD delivered vaginally, and cesarean sections were performed only for obstetric indications.[15] Table 1 summarizes previously published case reports of PD during pregnancy, highlighting variations in maternal presentation, treatment regimens, fetal outcomes, and delivery methods.

Table 1 Reported Cases of Parkinson's Disease in Pregnancy

Author, Year	Timing of Parkinson's Disease in Relation to Pregnancy	Maternal Age During Pregnancy	Age at Parkinson's Disease Diagnosis	Parkinson's Therapy During Pregnancy	Pregnancy/ Fetal/ Neonatal Outcomes	Mode of Delivery
Hagell et al, 1998[16]	Before pregnancy	34 years	34 years	L-dopa/benserazide 450/128.25 mg/day; selegiline discontinued; bromocriptine briefly added	Healthy male infant (3050 g); Apgar 9/10/10; normal development	Cesarean section
Asha et al, 2010[17]	Before pregnancy	29 years	27 years	Bromocriptine, levodopa, ropinirole, benzhexol (dose increased by 25%)	No congenital anomalies reported	Cesarean section
Benbir et al, 2014[18]	Before pregnancy	37 years	35 years	Pramipexole 2 mg TID, increased to 3 mg TID	Healthy male infant, 2.8 kg; no congenital anomalies	Cesarean section
Sazci et al, 2019[19]	Before pregnancy	38 years	34 years	Stalevo, Azilect, Pexola	Spontaneous abortion (first trimester)	Spontaneous abortion (first trimester)
Olivola et al, 2020[6]	Before pregnancy; symptoms worsened at 16 weeks' gestation	40 years	32 years	Increased L-DOPA/carbidopa dose up to 500/125 mg/day	Healthy neonate with Apgar score 9; no reported complications	Cesarean section
Li et al, 2023[20]	Before pregnancy	30 years	24 years	Levodopa/benserazide 100/25 mg twice daily; temporarily discontinued in second trimester	Healthy neonate with Apgar score 9; no fetal complications	Vaginal delivery at preterm

In the present review, Table 1 summarizes reported cases of Parkinson's disease during pregnancy, in which four infants were delivered by cesarean section, one pregnancy ended in spontaneous abortion, and one infant was delivered vaginally at a preterm gestational age. The occurrence of a vaginal delivery in a patient with Parkinson's disease, even at preterm gestation, suggests that Parkinson's disease itself does not constitute an absolute contraindication to vaginal labor.

From a pathophysiological perspective, motor symptoms such as rigidity, tremor, and bradykinesia could theoretically impair maternal pushing efforts during the second stage of labor.[6] However, the severity and distribution of these motor symptoms vary widely among patients, and mild-to-moderate cases may retain sufficient muscle coordination and endurance to accomplish vaginal delivery. Adequate control of symptoms through optimized dopaminergic therapy during pregnancy is critical to preserving motor function and preventing intrapartum complications.[6] Therefore, in selected patients with stable disease and good motor control, a trial of labor remains a reasonable and safe option, provided there is close interdisciplinary collaboration between obstetricians and neurologists.

PD does not appear to increase the risk of spontaneous miscarriage. In one review, the miscarriage rate among women with PD was approximately 5%, which is actually lower than the general US miscarriage rate of 15–17%.[8] However, three cases of fetal congenital anomalies were reported among 75 infants born to mothers with idiopathic PD. These anomalies included osteomalacia, a ventricular septal defect, and an inguinal hernia, all of which occurred in infants exposed to anti-Parkinsonian medications during pregnancy.[8]

This case report has several limitations. As a single-case observation, the findings cannot be generalized to all pregnant women with Parkinson's disease. In addition, long-term maternal neurological outcomes after delivery and detailed infant developmental follow-up were not available, limiting the assessment of sustained maternal disease control and long-term neonatal safety. Accordingly, these findings should be interpreted with caution and viewed as preliminary.

In summary, while PD presents unique clinical challenges during pregnancy, available evidence—including the present case—indicates that favorable maternal and fetal outcomes are achievable with careful multidisciplinary management. Effective multidisciplinary coordination involving neurologists and obstetricians is essential to create personalized care plans that balance maternal disease management with fetal well-being across pregnancy and childbirth. Vaginal delivery is feasible in women with well-controlled motor symptoms, and the choice of delivery mode should be guided by standard obstetric indications rather than the diagnosis of PD alone. Continued documentation of such cases is

essential to expand the limited evidence base, refine management strategies, and provide more definitive counseling for women of reproductive age living with PD.

Conclusion

Parkinson's disease (PD) can manifest in women of reproductive age, making pregnancy a possible scenario in affected patients. Continuation of treatment during pregnancy is important to prevent symptom progression, although medication choices should be made cautiously given the limited safety data for certain agents. Vaginal delivery remains a feasible option, as PD itself is not an absolute indication for cesarean section. Preconception counseling, careful medication review, and ongoing multidisciplinary collaboration between neurologists and obstetricians are essential to optimize maternal disease control and fetal outcomes throughout pregnancy and delivery.

Registration of Research Studies

Registration of research is not applicable in our case.

Ethical Approval

This study is exempted from an ethical approval as determined by the institutional and department review board.

Informed Consent Patient Statement

The authors confirm that written informed consent has been obtained from the involved patient(s). The patient(s) has been informed about the details of the case and has provided approval for the information to be published in this case report (series).

Author Contributions

All authors made a significant contribution to the work reported, whether that is in the conception, study design, execution, acquisition of data, analysis and interpretation, or in all these areas; took part in drafting, revising or critically reviewing the article; gave final approval of the version to be published; have agreed on the journal to which the article has been submitted; and agree to be accountable for all aspects of the work.

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The authors declare that they have no competing interests in this work.

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