International Journal of Reproduction, Contraception, Obstetrics and Gynecology
Das P et al. Int J Reprod Contracept Obstet Gynecol. 2026 Dec;15(12):5122-5124
www.ijrcog.org
pISSN 2320-1770 | eISSN 2320-1789

DOI: https://dx.doi.org/10.18203/2320-1770.ijrcog20264445

Case Report

High-grade glioma in late pregnancy: a neuro-obstetric management dilemma

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Received: 10 October 2026
Revised: 06 November 2026
Accepted: 07 November 2026

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ABSTRACT

The diagnosis of high-grade glioma during pregnancy is a rare event (3–6 cases per 100,000 deliveries). It frequently masks as eclampsia when presenting with new onset seizures, creating confusion regarding diagnosis. This creates a dilemma for obstetricians concerning the timing of termination of pregnancy, balancing maternal oncological intervention against fetal wellbeing. This case highlights the individualised management required for a patient presenting in the second trimester with seizures and high-grade glioma in the left temporal lobe. A 21-year-old G2P1L1 presented during the late second trimester with recurrent generalized tonic-clonic seizures and progressively worsening headache. She was normotensive, and evaluation for obstetric causes of seizures was initiated. Magnetic resonance imaging of the brain was suggestive of a high-grade glioma. She was managed conservatively with the aim of achieving fetal maturity. Caesarean delivery was performed at 36 weeks under general anesthesia. A healthy live infant was delivered. Following postoperative stabilization, the patient was transferred to a higher neurosurgical centre. It is important to consider intracranial pathology in pregnant women presenting with new-onset seizures and headache. Elective termination of pregnancy via LSCS in the early third trimester is a preferred strategy for malignant brain tumors to allow for the initiation of definitive maternal radiotherapy and chemotherapy, which are otherwise contraindicated during gestation. This case points out that diagnosis of brain tumor in pregnancy is a challenge. A coordinated neuro-obstetric approach can facilitate individualized management and optimize maternal and neonatal outcomes.

Keywords: High-grade glioma, Pregnancy, Caesarean section, Seizures, Neuro-obstetreic

INTRODUCTION

Brain tumors diagnosed during pregnancy are rare but clinically challenging conditions requiring the simultaneous consideration of maternal neurological status and fetal well-being.[1] The physiological changes inherent to pregnancy often complicate the clinical assessment of intracranial disease, while common tumor-related symptoms such as headache, nausea, vomiting, visual disturbances, and seizures may overlap with common pregnancy-related conditions.[2] Pregnancy induces a robust angiogenic state, increased plasma volume, hyperdynamic circulation, and significant hormonal shifts, all of which can potentially accelerate tumor proliferation and progression.[3] The presentation of a brain tumor with seizures during pregnancy creates an acute diagnostic dilemma. While eclampsia remains a critical primary differential diagnosis in a pregnant woman with new-onset seizures, underlying neurological pathology must be evaluated—particularly when hypertension and classic laboratory features of preeclampsia are absent, or when localized symptoms such as progressive headache precede seizure episodes.[4,5] Neuroimaging, specifically magnetic resonance imaging (MRI), plays an indispensable role in establishing an accurate diagnosis when an intracranial lesion is suspected.[5] When high-grade tumors present near

the late second or early third trimester, obstetricians face complex decisions regarding the timing and mode of delivery to ensure maternal survival without compromising fetal maturity.[6]

CASE REPORT

Patient information

A 21-year-old female (G2P1L1) presented to the antenatal outpatient department at 30 weeks and 5 days of gestation with a history of new-onset, recurrent generalized tonic-clonic seizures and progressively worsening headaches. The patient was normotensive upon evaluation. A standard workup for eclampsia was initiated, and an MRI of the brain was promptly ordered to rule out primary intracranial pathology.

Investigations

Neuroimaging which included plain MRI of the brain revealed a well-defined 32mm× 29mm×32 mm lesion in the left temporal lobe. The lesion was T1 isointense and T2/FLAIR hyperintense with surrounding vasogenic edema. Diffusion-weighted imaging (DWI) showed restricted diffusion ADC=0.76×10^{-3} cm^2/ sec, and MRS identified a prominent choline peak (Cho/Cr ratio 1.68), supporting a diagnosis of high-grade glioma.

Laboratory data included all blood investigations were within normal limit. No histopathological diagnosis was available to the authors at the time of preparation of this manuscript

Management

Upon the radiological diagnosis of a high-grade glioma, the patient was initiated on Levetiracetam 500 mg twice daily. A conservative neuro-obstetric management strategy was adopted to promote fetal maturity while attempting to stabilize the maternal neurological status and prevent further rapid tumor deterioration.

At 35 weeks and 5 days of gestation, the patient was admitted to our facility (which is equipped with a neonatal intensive care unit) for a planned caesarean section. At exactly 36 weeks of gestation, a 2.692 kg female infant was delivered in cephalic presentation with an APGAR score of 9/10 at 5 minutes. The patient was transferred to the High Dependency Unit (HDU) for close maternal monitoring and continuation of anti-seizure pharmacotherapy. Post-operative neurological evaluation confirmed the patient was conscious, oriented, and free of any new focal deficits. Following safe delivery and surgical recovery, she was referred to a tertiary neurosurgical center for definitive intervention. According to available follow-up clinical information, she subsequently underwent surgical resection of the intracranial lesion and commenced adjuvant oncological treatment.

Table 1: Relative risk of abnormal Doppler indices with adverse perinatal outcome.

Time/Gestational Age	Clinical Event
~28–29 weeks	Onset of recurrent generalized tonic-clonic seizures reported.
~29–30 weeks	Progressive headache developed and steadily worsened.
30 weeks + 5 days	Presentation to antenatal service; patient was normotensive; evaluation for eclampsia initiated.
~30–31 weeks	MRI brain demonstrated a 32 × 29 × 32 mm left temporal intra-axial lesion with surrounding edema and features suggestive of high-grade glioma.
Following diagnosis	Levetiracetam 500 mg twice daily initiated; conservative management adopted to allow fetal maturation.
35 weeks + 5 days	Admission for planned delivery at a centre with neonatal intensive care facilities.
36 weeks	Elective Caesarean delivery performed under general anesthesia.
Same day	Live female infant delivered, birth weight 2.692 kg, Apgar 9/10 at 5 minutes.
Postoperative period	Mother monitored in HDU; conscious and oriented without newly documented neurological deficit.
Following stabilization	Referred to a higher neurosurgical centre for definitive treatment.
Subsequent period	Underwent neurosurgical resection and initiated adjuvant oncological treatment.

DISCUSSION

Brain tumors presenting during pregnancy pose exceptional diagnostic and therapeutic challenges.[7] Maternal neurological deterioration must be constantly weighed against fetal maturity and the severe consequences of delaying definitive oncological treatment.[8] This case highlights that neurological symptoms in pregnancy demand a broad differential diagnosis and comprehensive imaging, rather than an automatic attribution to eclampsia alone.[6] The physiological and hormonal alterations of pregnancy are known to be associated with accelerated clinical deterioration and increased tumor volume or growth.[7]

In the present case, delivery was strategically planned at 36 weeks following conservative initial management. This permitted sufficient fetal maturation while avoiding the risks of prolonged pregnancy in a patient with recurrent seizures and a radiologically advanced intracranial lesion. Termination of pregnancy or planned delivery is frequently recommended after 34 weeks in these scenarios to rapidly facilitate neurosurgery and aggressive adjuvant chemotherapy or radiotherapy, treatments that pose severe teratogenic risks during active gestation.[1,7]

CONCLUSION

New-onset neurological symptoms or seizures occurring in the late second and third trimesters of pregnancy can mimic eclampsia, posing a severe diagnostic challenge for obstetricians. Urgent neuroimaging to exclude high-grade cranial neoplasms is vital. In cases that threaten maternal stability, determining the optimal timing for delivery without compromising the clinical course of the tumor is crucial for both maternal and fetal well-being. A planned delivery via lower segment caesarean section (LSCS) under neuroprotective general anesthesia is highly effective. This multidisciplinary approach successfully balances immediate fetal survival with the mother's seamless transition to definitive, life-saving neuro-oncological care.

Funding: No funding sources
Conflict of interest: None declared
Ethical approval: Not required

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Cite this article as: Das P, Medhi R. High-grade glioma in late pregnancy: a neuro-obstetric management dilemma. Int J Reprod Contracept Obstet Gynecol 2026;15:5122-4.