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Successful Spinal Anesthesia in a Parturient With Hemolysis, Elevated Liver Enzymes, and Low Platelet Count (HELLP) Syndrome and Severe Thrombocytopenia: A Case Report

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Abstract

Hemolysis, elevated liver enzymes, and low platelet count (HELLP) syndrome can complicate the choice of anesthesia for emergency cesarean delivery. Severe thrombocytopenia raises concern about spinal epidural hematoma following neuraxial anesthesia. Obesity and an anticipated difficult airway can also complicate general anesthesia.

A 36-year-old gravida 3, para 2 woman at 32 weeks of gestation required emergency cesarean delivery for severe preeclampsia complicated by HELLP syndrome. Her pretransfusion platelet count was 55 × 10^9/L. She had a body mass index of 40 kg/m^2 and an anticipated difficult airway and was receiving magnesium sulfate for seizure prophylaxis. After multidisciplinary assessment, the team selected single-shot spinal anesthesia. Platelet concentrate was administered before spinal placement because of concern about surgical bleeding. Spinal anesthesia was performed at L3-L4 using a 27-gauge pencil-point needle and 12.5 mg of 0.5% hyperbaric bupivacaine. The block provided adequate surgical anesthesia, and maternal hemodynamics remained stable. No neurological complications were observed during the 72 hours after spinal anesthesia. The neonate had Apgar scores of 4 and 5 at one and five minutes, respectively, and was intubated and transferred to the neonatal intensive care unit (NICU).

This case illustrates how the urgency of delivery, anticipated airway difficulty, and bleeding risk informed the choice of anesthesia in a parturient with HELLP syndrome and severe thrombocytopenia. Further evidence is needed to characterize the risk of neuraxial hematoma in this setting.

Categories: Obstetrics/Gynecology, Anesthesiology
Keywords: case report, cesarean delivery, difficult airway, hellp syndrome, neuraxial anesthesia, obstetric anesthesia, preeclampsia, severe thrombocytopenia, spinal anesthesia

Introduction

Patients with hemolysis, elevated liver enzymes, and low platelet count (HELLP) syndrome present one of the greatest anesthetic challenges in obstetric practice. HELLP syndrome is associated with significant maternal and fetal morbidity and mortality [1,2]. Maternal complications of HELLP syndrome include disseminated intravascular coagulation, placental abruption, and acute kidney injury [1,2].

Thrombocytopenia complicates the choice of anesthetic technique for cesarean delivery because neuraxial anesthesia may increase the risk of spinal epidural hematoma, whereas general anesthesia may be associated with difficult airway management, severe hypertensive responses during laryngoscopy, and aspiration, particularly in obese parturients with preeclampsia [2,3].

The Society for Obstetric Anesthesia and Perinatology (SOAP) consensus statement considers the risk of spinal epidural hematoma likely to be low at platelet counts of at least 70 × 10^9/L in parturients with hypertensive disorders of pregnancy in the absence of additional risk factors. Evidence is limited below this threshold. At platelet counts between 50 and 70 × 10^9/L, competing risks may justify a neuraxial procedure in selected cases. The assessment should consider the platelet trend, clinical signs of bleeding, the urgency of delivery, and the risks of general anesthesia [3].

We describe the anesthetic management of an emergency cesarean delivery in a parturient with HELLP syndrome, a pretransfusion platelet count of 55 × 10^9/L, obesity, and an anticipated difficult airway who was receiving magnesium sulfate for seizure prophylaxis. This case illustrates how the team weighed the bleeding risk associated with neuraxial anesthesia against the anticipated airway and hemodynamic risks of general anesthesia in the setting of urgent delivery.

This work was previously presented as an abstract poster at the European Society of Anaesthesiology and

Intensive Care (ESAIC) Congress (Euroanaesthesia) 2026 in Rotterdam.

Case Presentation

A 36-year-old gravida 3, para 2 woman at 32 weeks of gestation (body mass index: 40 kg/m^2) was admitted with severe preeclampsia complicated by HELLP syndrome. On admission, her blood pressure was 180/110 mmHg, and laboratory investigations revealed severe thrombocytopenia and elevated liver enzymes (Table *1*). The fetus had intrauterine growth restriction, and emergency cesarean delivery was indicated because of maternal and fetal deterioration. Antenatal ultrasound images demonstrating fetal growth restriction were not available for inclusion in this report.

Test	Value	Unit	Reference Range
Hemoglobin	13.0	g/dL	12.5–17.4
Hematocrit	37.1	%	37–51
Platelet count	55,000	/µL	130,000–400,000
White blood cell count	10.49	×10^9/L	4.5–11
Neutrophils	7.83	×10^9/L	1.5–7.07
Lymphocytes	1.85	×10^9/L	1.6–4.0
Creatinine	0.75	mg/dL	0.55–1.0
ALT	93.7	U/L	12–70
AST	161.9	IU/L	12–50
Direct bilirubin	0.40	mg/dL	0–0.2
D-dimer	8,102	ng/mL	<500
LDH	997	U/L	135–214
INR	0.80	—	0.8–1.24

TABLE 1: Laboratory investigations on admission

ALT: alanine aminotransferase; AST: aspartate aminotransferase; D-dimer: fibrin degradation product; INR: international normalized ratio; LDH: lactate dehydrogenase

The patient had morbid obesity (body mass index: 40 kg/m^2) and features suggestive of an anticipated difficult airway, increasing the risks associated with general anesthesia. Magnesium sulfate therapy was initiated on admission with a loading dose of 4 g administered intravenously, followed by a maintenance infusion of 1 g/hour for seizure prophylaxis; this regimen was continued throughout the preoperative preparation period, which lasted approximately 2.5 hours prior to surgery. Antihypertensive treatment was continued according to institutional protocol. Following multidisciplinary discussion involving the obstetric, anesthesiology, and neonatology teams, the risks and benefits of neuraxial and general anesthesia were carefully evaluated.

There were no clinical signs of active bleeding at the preoperative assessment. The INR was 0.80, and the activated partial thromboplastin time (aPTT) and fibrinogen level were within the laboratory reference intervals. After weighing the bleeding risk associated with neuraxial anesthesia against the risks of general anesthesia in a patient with an anticipated difficult airway who required urgent delivery, the team selected single-shot spinal anesthesia.

The preoperative platelet count was 55 × 10^9/L before transfusion. Before spinal placement, the patient received four pooled units of platelet concentrate and 1 g of intravenous tranexamic acid. The platelet transfusion was given to provide hemostatic support for emergency cesarean delivery because of concern about surgical bleeding.

Standard American Society of Anesthesiologists (ASA) monitoring, including continuous electrocardiography, noninvasive blood pressure measurement, pulse oximetry, and capnography, was applied. Large-bore intravenous access was secured, and emergency airway equipment, blood products, and vasopressor medications were immediately available.

Spinal anesthesia was performed at the L3-L4 interspace using a 27-gauge Pencan spinal needle (B. Braun Melsungen AG, Melsungen, Germany) under strict aseptic conditions. After confirmation of free cerebrospinal fluid flow, 12.5 mg of 0.5% hyperbaric bupivacaine was administered intrathecally. A sensory block to the T4 dermatome was achieved, providing satisfactory surgical anesthesia without conversion to general anesthesia.

The cesarean delivery proceeded uneventfully. Maternal hemodynamics remained stable throughout the procedure without significant hypotension or excessive bleeding. The neonate weighed 1,800 g and had Apgar scores of 4 and 5 at one and five minutes, respectively. The neonate was intubated and transferred to the neonatal intensive care unit (NICU).

After surgery, the patient was transferred to the intensive care unit, where the platelet count was rechecked. Serial neurological examinations during the first 72 hours after spinal anesthesia revealed no new neurological deficits or other clinical findings suggestive of spinal epidural hematoma. Platelet counts increased, and liver enzyme levels declined during the postoperative period (Table *2*). Hemoglobin decreased from 13.0 g/dL on admission to 9.2 g/dL on postoperative day 3. No clinical signs of active bleeding, hemodynamic instability, or wound-site hematoma were documented. The cause of the hemoglobin decline remained uncertain. The patient was discharged without neurological sequelae.

Parameter	Admission (Day 0)	POD 1	POD 2	POD 3
Platelet count (×10⁹/L)	55	64	74	79
AST (U/L)	161.9	83.2	58.4	83.1
ALT (U/L)	93.7	71.1	48.9	-
LDH (U/L)	997	865	711	754
INR	0.80	0.77	0.80	0.83
Hemoglobin (g/dL)	13.0	12.6	9.7	9.2

TABLE 2: Postoperative trend of laboratory parameters

POD: postoperative day; AST: aspartate aminotransferase; ALT: alanine aminotransferase; LDH: lactate dehydrogenase; INR: international normalized ratio; —: test not repeated on this postoperative day

Discussion

HELLP syndrome is one of the most severe complications of hypertensive disorders of pregnancy and is frequently associated with thrombocytopenia, making the choice of anesthetic technique particularly challenging [1,2]. Traditionally, neuraxial anesthesia has been avoided in patients with severe thrombocytopenia because of concerns regarding spinal epidural hematoma. However, recent evidence suggests that the risk should not be determined by platelet count alone but should instead incorporate platelet trends, coagulation status, the underlying etiology of thrombocytopenia, and the overall clinical condition of the patient [3].

The pretransfusion platelet count was 55 × 10^9/L. The preoperative INR was 0.80, and the aPTT and fibrinogen level were within the laboratory reference intervals. The team considered these findings alongside the urgency of delivery and the anticipated difficult airway. Platelet concentrate was administered before spinal anesthesia to provide short-term hemostatic support for cesarean delivery because of concern about surgical bleeding. The effect of transfusion on the risk of spinal epidural hematoma cannot be determined from this case.

General anesthesia was considered to carry substantial risk in this patient. Morbid obesity, anticipated difficult airway, severe hypertension, and ongoing magnesium sulfate therapy increased the likelihood of difficult tracheal intubation, exaggerated hemodynamic responses during laryngoscopy, and postoperative respiratory complications [2,4]. Avoiding airway manipulation therefore represented an important consideration in selecting the anesthetic technique.

A single-shot spinal technique using a 27-gauge pencil-point needle provided adequate surgical anesthesia for the emergency cesarean delivery. Maternal hemodynamics remained stable throughout the procedure. Serial neurological examinations during the first 72 hours after spinal anesthesia showed no new neurological deficits or other clinical findings suggestive of spinal epidural hematoma.

Although increasing evidence supports the use of neuraxial anesthesia in selected obstetric patients with thrombocytopenia, the available literature remains limited, particularly in patients with platelet counts below 70 × 10^9/L [3,5]. Consequently, each patient should be evaluated individually, balancing the potential risk of neuraxial hematoma against the risks associated with general anesthesia. Close postoperative neurological assessment remains essential for early recognition of rare complications.

This report describes a single patient, and the findings cannot establish the safety of neuraxial anesthesia in patients with HELLP syndrome and severe thrombocytopenia. The reported platelet count of 55 × 10^9/L was measured before transfusion. Platelet function testing was not performed, and documented neurological follow-up was limited to 72 hours after spinal anesthesia.

Conclusions

Following multidisciplinary discussion, single-shot spinal anesthesia was selected for emergency cesarean delivery in a parturient with HELLP syndrome after weighing the risk of neuraxial bleeding against the anticipated difficulty of securing the airway under general anesthesia. Platelet transfusion was given to provide hemostatic support for surgery. Cesarean delivery was completed under spinal anesthesia, and no neurological complications were observed during 72 hours of follow-up. Because the platelet count of 55 × 10^9/L was measured before transfusion, this case provides limited evidence about the risk of neuraxial hematoma at that count.

Additional Information

Author Contributions

All authors have reviewed the final version to be published and agreed to be accountable for all aspects of the work.

Concept and design: Lala Aliyeva, Sahab Niftaliyeva

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Disclosures

Human subjects: Informed consent for treatment and open access publication was obtained or waived by all participants in this study. **Conflicts of interest:** In compliance with the ICMJE uniform disclosure form, all authors declare the following: **Payment/services info:** All authors have declared that no financial support was received from any organization for the submitted work. **Financial relationships:** All authors have declared that they have no financial relationships at present or within the previous three years with any organizations that might have an interest in the submitted work. **Other relationships:** All authors have declared that there are no other relationships or activities that could appear to have influenced the submitted work.

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