ISSN: 1607-8322, e-ISSN: 2220-5799 Anaesthesia, Pain & Intensive Care
Vol 29(2); April 2025 DOI: 10.35975/apic.v29i2.2644

CORRESPONDENCE OBSTETRIC ANESTHESIA

# Anesthesia for electroconvulsive therapy in a unique patient population: pregnancy

**Bilge Tuncer [1], Melike Beyza Arici [2], Hasan Kaya [3], Ezgi Erkiliç [4], Levent Öztürk [5]**

**Author affiliations:**

1. Bilge Tuncer, Department of Anesthesiology, Ankara Bilkent City Hospital, Ankara, Turkeye; Email: bilgetuncer@yahoo.com, {ORCID:0000-0002-0764-6248}
2. Melike Beyza Arici, Department of Anesthesiology, Ankara Bilkent City Hospital, Ankara, Turkeye; Email: melikebeyzaaricii@gmail.com, {ORCID:0009-0001-9371-9617}
3. Hasan Kaya, Department of Phychiatry, Ankara Bilkent City Hospital, Ankara, Turkeye; Email: dr.kaya.hasan@gmail.com, {ORCID:0000-0002-9289-6013}
4. Ezgi Erkiliç, Department of Anesthesiology, Ankara Bilkent City Hospital, Ankara, Turkeye; Email: eerkilic72@yahoo.com, {ORCID:0000-0002-1211-9354}
5. Levent Öztürk, Department of Anesthesiology, Ankara Bilkent City Hospital, Ankara, Turkeye; Email: dr_levent@yahoo.com, {ORCID:0000-0001-9755-033X}

**Correspondence:** Bilge Tuncer, **Email:** bilgetuncer@yahoo.com, **Mobile:** 90 5323363443

**Citation:** Tuncer B, Arici MB, Kaya H, Erkiliç E, Öztürk L. Anesthesia for electroconvulsive therapy in a unique patient population: pregnancy (Correspondence). Anaesth. pain intensive care 2025;29(2):368-370; **DOI:** 10.35975/apic.v29i2.2644
**Received:** January 28, 2025; **Revised:** February 21, 2025; **Accepted:** February 21, 2025

To the editor,

Electroconvulsive therapy (ECT) is a procedure that involves the application of an electrical current to the patient's scalp, using brief pulse stimulation techniques under general anesthesia and muscular paralysis, resulting in the induction of a series of generalized epileptic seizures. The primary indications for ECT include major depressive disorder (unipolar or bipolar) that is unresponsive to pharmacotherapy, intolerance to medications due to adverse effects or comorbid conditions, the need for a rapid therapeutic response due to conditions such as catatonia, psychosis, suicidal ideation, or clinically significant dehydration or malnutrition, as well as other conditions including mania, schizophreniform disorder or schizoaffective disorder, and medical conditions such as Parkinson's disease, neuroleptic malignant syndrome, and chronic pain.[1]

The treatment of major psychiatric disorders during pregnancy presents a significant challenge due to various factors. Pregnancy constitutes a unique circumstance in which pharmacotherapy is associated with a risk of major congenital malformations during the first trimester and potential drug toxicity or withdrawal effects in the third trimester. Furthermore, several psychotropic medications have been implicated in fetal neurodevelopmental sequelae during gestation.[1] In addition to the inherent risk factors associated with pregnancy, including obesity, hypertension, and diabetes, life-threatening conditions that are refractory to pharmacological treatment, such as catatonia, suicidal ideation, and psychotic disorders, can occur, thereby endangering both the fetus and the mother. In these instances, ECT, characterized by its high efficacy, is considered a viable option. ECT has been advocated as an alternative to pharmacotherapy for pregnant women with major mental illness, thus limiting fetal exposure to the transplacental passage of chemical agents.[1]

Propofol is a recommended anesthetic agent for ECT in pregnancy. It produces rapid induction with fast recovery properties and reduces the risk of nausea and vomiting. Owing to its low molecular weight and lipid solubility, rapid clearance from fetal circulation is possible.[2] Rocuronium, which is increasingly used in ECT as an alternative to succinylcholine, has a rapid onset and its effect is rapidly recovered with sugammadex. The risk of gastric reflux and aspiration pneumonia is high especially in the last trimester of pregnancy. Combined use of rocuronium and sugammadex, allows rapid recovery with the short-acting propofol used as an induction agent in anesthesia. Sugammadex is a large and polarized molecule with limited placental transfer. There is no evidence of fetal developmental abnormalities. Although there is concern about appropriateness of sugammadex for neuromuscular blockade reversal due its binding to progesterone which may cause adverse effects such as early cessation of pregnancy, there is no clinical evidence supporting this assumption. Preliminary literature supports its safety.[3,4]

Subsequent to obtaining ethical approval from the Ankara Bilkent City Hospital Ethics Committee (TABED 1-24-633), we conducted a retrospective

 

analysis of the patient records and anesthesia charts of pregnant patients who received anesthesia for ECT at Ankara Bilkent City Hospital between 2019 and 2024. The objective was to assess the anesthetic techniques employed, intraprocedural challenges (such as hypotension, arrhythmia, tachycardia, and airway compromise), and any associated maternal and fetal complications. Over a 5-year period, 7 pregnant patients were identified as having received anesthesia for ECT. The patients' ages ranged from 20 to 41 years; 5 patients had bipolar disorder (3 manic episodes, 2 depressive episodes), and 2 patients had major depressive disorder. Two patients had a previous history of ECT. One patient had a history of hypertension, and one had hypothyroidism. The gestational ages at the time of ECT varied from 5 to 34 weeks, and the total number of treatment sessions performed during their pregnancies ranged from 3 to 12. The patients were hospitalized for periods ranging from 21 to 50 days. For anesthetic management during ECT sessions, intravenous propofol was administered to all patients, muscular paralysis was achieved via rocuronium, and the effects of the neuromuscular blockade were reversed through sugammadex administration. No instances of difficult airway, hemodynamic instability, or other anesthesia-related complications were encountered. Four patients had term deliveries, while two experienced preterm births. One patient, at 5 weeks' gestation, underwent a termination of pregnancy. This patient received ten ECT sessions, two being after termination. Of the patients who experienced preterm births, one, with a pre-existing history of hypertension, developed HELLP syndrome, requiring a cesarean delivery. Cesarean delivery was performed in five patients, and one patient had a vaginal delivery. One fetus was found to have experienced fetal distress, and intrauterine growth restriction was documented in two fetuses. No complications were noted during the ECT procedures themselves. Upon psychiatric evaluation, all patients exhibited marked improvements in their mental state.

Pregnant patients represent a population that necessitates meticulous care and attention to both maternal and fetal health. The existing body of literature comprises limited case reports and reviews pertaining to the use of ECT in pregnancy.[1,5-8] Given the ethical challenges inherent in conducting controlled studies in this patient population, the sharing of clinical experiences, observed difficulties, and outcomes is paramount. With the increasing utilization of ECT, the likelihood of encountering these cases rises, highlighting the utility for anesthesiologists to be cognizant of potential clinical scenarios and key areas for consideration. Pompili et al.[5] reported a complete or partial treatment response in 84% of pregnant women with depression who were treated with ECT, compared with a response rate of 61% in pregnant women with schizophrenia. The most frequently observed maternal adverse effects included confusion, memory impairment, myalgia, headache, hypertension, vaginal bleeding, placental abruption, uterine contractions, and the induction of preterm labor. The fetal adverse effects most commonly reported include transient decreases in fetal heart rate, multiple cortical infarcts, ascites, transposition of the great vessels, stillbirth, and neonatal mortality. One of the patients was in first trimester. The process of organogenesis is known to evolve within the third to eighth weeks in utero. The first trimester, is considered the most sensitive to teratogenic exposure. Although there is concern in anesthetic medication, especially if given in this period, which involves some potential embryonic risks, the severity of the mental deterioration emerging in this case made it impossible to postpone ECT treatment. Informed consent was obtained from the patients' relatives both for anesthesia and for the utilization of their medical data in educational activities.

In anesthetic practice, a variety of agents have been utilized in the literature to promote maternal and infant safety. These cases underscore the need for a collaborative, interdisciplinary approach, characterized by effective communication among obstetrics, psychiatry, and anesthesiology specialists.

## Acknowledgment

Highest thanks are expressed to all leaders of Poltekkes Kemenkes Surabaya, Surabaya, Indonesia who have facilitated this publication.

## Conflict of interest

Author declares no conflict of interest.

## Authors contribution

BT: Concept, conduction of study, literature search, manuscript writing

MBA: Data collection, literature search

HK: Concept, data collection, manuscript editing

EE, LO: Concept, conduction of study, manuscript editing

# REFERENCES

1. Wajima Z. Anesthesia Management of Special Patient Populations Undergoing Electroconvulsive Therapy: A Review. J Nippon Med Sch. 2019;86(2):70-80. [PubMed] DOI: 10.1272/jnms.JNMS.2019_86-202
2. Anderson EL, Reti IM. ECT in pregnancy: a review of the literature from 1941 to 2007. Psychosom Med. 2009;71(2):235-242. [PubMed] DOI: 10.1097/PSY.0b013e318190d7ca
3. Do W, Cho AR. What we need to know and do on sugammadex usage in pregnant and lactating women and those on hormonal contraceptives.

 

Anesth Pain Med (Seoul). 2023 Apr;18(2):114-122. [PubMed] DOI: 10.17085/apm.23041

4. Obiyo LT, Tobes D, Cole NM. Anesthetic recommendations for maternal and fetal safety in nonobstetric surgery: a balancing act. Curr Opin Anaesthesiol. 2024 Jun 1;37(3):285-291. [PubMed] DOI: 10.1097/ACO.0000000000001363
5. Pompili M, Dominici G, Giordano G, Longo L, Serafini G, Lester D, et al. Electroconvulsive treatment during pregnancy: a systematic review. Expert Rev Neurother. 2014 Dec;14(12):1377-90. [PubMed] DOI: 10.1586/14737175.2014.972373
6. Grover S, Sikka P, Saini SS, Sahni N, Chakrabarti S, Dua D, et al. Use of modified bilateral electroconvulsive therapy during pregnancy: A case series. Indian J Psychiatry. 2017 Oct-Dec;59(4):487-492. [PubMed] DOI: 10.4103/psychiatry.IndianJPsychiatry_50_17
7. Özgül Ü, Erdoğan MA, Şanlı M, Erdil F, Begeç Z, Durmuş M. Anaesthetic Management in Electroconvulsive Therapy During Early Pregnancy. Turk J Anaesthesiol Reanim. 2014 Jun;42(3):145-7. [PubMed] DOI: 10.5152/TJAR.2014.73645
8. Lovas A, Almos PZ, Peto Z, Must A, Horváth S. Anesthesia for electroconvulsive therapy in early pregnancy. J ECT. 2011 Dec;27(4):328-30. [PubMed] DOI: 10.1097/YCT.0b013e318213cd00

 