# It is illegal to post this copyrighted PDF on any website. Electroconvulsive Therapy During Pregnancy

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## ABSTRACT

Women often experience worsening mood disorder symptoms during pregnancy. Women with mood disorders have an increased risk for suboptimal prenatal care, inadequate weight gain, and more substance abuse during pregnancy. It is often difficult to balance pharmacotherapy risks to a developing fetus versus not medicinally treating maternal mental health conditions. Electroconvulsive therapy (ECT) is a rapid and effective treatment option that can be an appropriate intervention in some women during pregnancy. This report presents an overview of ECT in pregnancy and the case of a 28-year-old pregnant woman with bipolar mania who responded well to ECT.

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\*Corresponding author: Puneet Narang, MD, DayBridge PHP, Regions Hospital, 640 Jackson St, St Paul, MN 55101 (Puneet.d.Narang@healthpartners.com). The lifetime prevalence of bipolar disorder is 3%-7%.<sup>1</sup> In females, the incidence peaks between 12 and 30 years of age and coincides with their highest reproductive potential. Manic or hypomanic episodes in women with bipolar disorder can result in increased sexual activity with impaired judgment, which might lead to unplanned pregnancies.<sup>1,2</sup>

Women with bipolar disorders have elevated pregnancyrelated complication rates, including depression and suicide.<sup>1</sup> Patients with bipolar disorders are 20 to 30 times more likely to commit suicide than are people in the general population.<sup>3</sup> Nearly 92% of women with a mood disorder report a greater severity of psychiatric symptoms during pregnancy.<sup>4</sup> They have elevated rates of suboptimal prenatal care, inadequate weight gain, and substance abuse.<sup>3</sup> Women with bipolar disorder experience frequent labor inductions and an increased prevalence of preterm births.<sup>3</sup> Emergency cesarean sections occur 50% more often in these women compared to those without bipolar disorder.<sup>3</sup> Maternal-infant bonding can suffer in the postpartum period.<sup>5</sup> About 27% of mothers with bipolar disorder who have had an inpatient psychiatric admission during pregnancy were rehospitalized in their first postpartum year.3

The management of psychiatric illnesses during pregnancy is challenging. Treatment options usually include psychotherapy, medications, or electroconvulsive therapy (ECT). Psychotherapy is best utilized in less severe cases, especially when support systems are intact. Psychotherapy is also adjunctively provided during other interventions. Pharmacotherapy is effective but complicated by risk to the mother and fetus, especially because of medicinally induced obstetric complications or congenital malformations. ECT is indicated during pregnancy as a treatment when psychotherapy or medication is not effective or in cases of considerable illness-related risk to the mother or fetus. ECT is also utilized when the need to wait for the development of psychotherapy or pharmacotherapy efficacy is contraindicated.<sup>6</sup> Here, we provide an overview of ECT in pregnancy and present the case of a 28-year-old pregnant woman with bipolar mania who responded well to ECT.

### **Electroconvulsive Therapy**

ECT is a rapid and effective treatment modality that can be safely administered during pregnancy.<sup>2,4,5</sup> ECT is generally indicated in treatment-resistant conditions for people with psychiatric conditions, including depression, bipolar disorders, psychoses, catatonia, and acute suicidal instances.<sup>7–9</sup> Positive response is reported in 84% of cases with a mood disorder.<sup>5,9</sup> Adverse events include headache, confusion, muscle soreness, cardiac arrhythmias, and cognitive concerns such as anterograde or retrograde memory losses.<sup>5,10</sup>

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**Clinical Points** 

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- Electroconvulsive therapy (ECT) is indicated during pregnancy when the mother's psychiatric status is overtly dangerous to herself, the fetus, or others.
- ECT can be life-saving, especially when suicide prevention is urgently needed.
- ECT is not likely to be dangerous to a developing fetus or to cause significant obstetric risks.

ECT is often an underutilized treatment modality, especially during pregnancy. However, it is sometimes indicated during gestation when the psychiatric condition of the mother is dangerous to herself, the fetus, the obstetric status, or others.

Bradyarrhythmias are rarely documented by fetal heart rate monitoring but are a potential complication of ECT.<sup>4,7</sup> Transient pulse decreases are believed to result primarily from hypoxia.<sup>5</sup> Nevertheless, ECT is unlikely to significantly harm the developing fetus. Induction of premature labor is another possible adverse maternal event even though electrical current does not pass through the uterus. After electroconvulsive stimulation, levels of several hormones change. Oxytocin concentrations reach a peak just minutes postictally and may stimulate uterine contractions. The  $\beta_2$  agonist ritodrine reportedly can diminish such occurrences.<sup>5</sup> Infection, dehydration, and hypoxia are other potential risk factors for premature labor. There is evidence<sup>5</sup> citing ECT as safe during all trimesters and that it might not cause premature births. Contrarily, there are reports<sup>5,11</sup> about ECT inducing second- or thirdtrimester premature labor or other morbidities. However, ECT during pregnancy is generally considered to be a safe, effective treatment. Premature contractions and labor occur, yet ECT rarely causes significant gestational, obstetric, or delivery complications.<sup>5,7</sup> Physicians should nevertheless be aware of these potential maternal and fetal complications.11

Barriers to the use of ECT include social stigma, patient or physician anxiety, and unfamiliarity with its application. Some psychiatrists are not trained in its use. There are clinical facilities that do not offer ECT as an option. Fear or negative bias can be a factor. ECT also incurs an additional cost, as time in the recovery room and anesthesiology charges make ECT more expensive. There are also legal and malpractice concerns—malpractice insurance premiums are higher for practitioners who provide ECT.

Despite many patients having excellent results with ECT, some have had unpleasant experiences. ECT is known to sometimes result in memory loss. Finally, ECT sounds ominous and has a negative reputation because it involves passing electricity into the brain to cause a seizure. Additionally, stories in the media and movies such as "One Flew Over the Cuckoo's Nest" may have contributed to the negative stigma.

Nevertheless, ECT is effective even when other treatments have not been helpful. Thus, it remains a

pregnancy, despite bias against it.

### **CLINICAL VIGNETTE**

The police escorted a 27-year-old pregnant woman to the emergency department. The patient had fallen and was found lying down on a sidewalk and smoking cocaine. Her speech was rapid, tangential, and rambling. She had recently been released from jail, was taking no medications, and was homeless. Her family reported that she engages in risky sexual behaviors and takes cocaine. The family also reported that substance abuse was related to the severity of her manic symptoms. After obstetric and psychiatric consultations, the patient was hospitalized involuntarily for crisis management. An evaluation, performed because of her fall and cocaine exposure, ruled out placental abruption. A 27-week gestation was confirmed. The patient was agitated, and haloperidol was prescribed.

The patient exhibited a lack of self-care, poor cooperation, and thought disorganization. She expressed paranoia about a conspiracy to take her baby and suicidal ideation, saying she wanted to blow her brains out. Her mood was labile, while her speech was tangential, rambling, and hyperverbal. Her history was pertinent for a previous psychiatric hospitalization while suicidal and no prenatal care since release from jail. The patient was behaviorally inappropriate and slept fewer than 3 hours per night. She was diagnosed with bipolar I disorder, manic episode per *DSM-5* criteria. Haloperidol was replaced with risperidone for mood stabilization. Her initial Young Mania Rating Scale (YMRS)<sup>12</sup> score was 47.

After 1 week, the patient still displayed mania with disorganized speech, agitation, grandiosity, insomnia, and flight of ideas. She was dysfunctional and paranoid. A civil commitment proceeding was completed. Her disturbed condition warranted ECT. The patient did not have the capacity to make a decision; therefore, a petition to administer ECT was filed in court and upheld. The pre-ECT workup was unremarkable. She was oriented but remained excitable and psychotic. ECT began on hospital day 16.

ECT was initially administered 3 times per week using the Thymatron System (Somatics, LLC, Venice, Florida). Standard bitemporal electrode placements were applied due to indications for an urgent response.<sup>10</sup> Methohexital was the general anesthetic used.<sup>13</sup> Succinylcholine was prescribed for muscle relaxation, and atropine was administered to prevent maternal bradycardia. Endotracheal intubation was initially not required and is indicated only as needed during pregnancies in the third trimester.<sup>6,7</sup> Hyperventilation with 100% oxygen was provided for oxygenation and to augment the ictal duration.<sup>14</sup> Fetal heart rate monitoring was noted as unremarkable before and after each treatment.<sup>7,15</sup> A total of 9 ECT treatments were administered.

The first 3 ECT sessions had no complications, and the stimulus intensity was incrementally increased each

**It is illegal to post this copy** time (15%, 20%, and 30%, respectively). The stimulus then remained at 30% for the subsequent 6 ECT sessions. The pulse width was 0.50 milliseconds in all treatments. She evidenced adequate motor and electroencephalographic seizures that were over 15 seconds in duration.<sup>16</sup> Then, having reached the third trimester, the patient was intubated during the final 3 treatments.

Clinical improvement began following the second ECT session. The patient indicated that it diminished her racing thoughts. She became calmer, organized, and future-oriented and requested chemical dependency treatment. Following the third ECT session, memory gaps were reported and resolved over the next 24 hours.

After the fourth ECT session, the patient evidenced confusion and poor recall. Her Mini-Mental State Examination<sup>17</sup> score was 24 of 30, with no baseline for comparison. ECT was discontinued. Over the next week, she stabilized with no evidence of mania or depression but remained talkative and anxious. Eleven days following her last ECT session, the patient became excitable and required additional risperidone. Two days later, with increased mania, insomnia, and no obstetric concerns, the patient was receptive to reinstating ECT, this time only on a once-per-week regimen.

The fifth ECT session was administered at the same parameters and remained uncomplicated. Mania disappeared, and her mood improved, with a score of 5 on the YMRS. Four days later, the patient was induced for labor at 37 weeks because of preeclampsia. However, the baby did not tolerate labor and was delivered via cesarean section. The baby's health status was reported to be within normal limits.

As the patient was doing well, ECT was no longer indicated, and a medication regimen of lithium and risperidone was prescribed. The patient was then discharged in stable condition and referred to outpatient chemical dependency treatment. **hted PDF on any website** on dangers to the fetus and the risk-to-benefit profiles for the mother. Pharmacotherapy is often indicated for mood disorder patients because of risks and stress for the mother and child. Nonintervention can lead to complications such as high rates of miscarriage, preterm delivery, and low birth weight.<sup>18</sup>

ECT can acceptably be recommended during pregnancy when mothers are at risk of harming themselves or others. This is especially the case when patients evidence suicidal thinking, catatonia, psychoses, or dangerous medical problems like dehydration secondary to their psychiatric symptoms. Indications for ECT are heightened if the mother's condition is compromising the obstetric status or safety of the fetus.

Following a course of ECT, pregnant women should be prescribed psychotropic medications as indicated during the postpartum period.<sup>17</sup> Approximately 86% of those who discontinue their mood disorder medicines while just postpartum experience relapse compared to 37% who continue pharmacotherapy.<sup>19</sup>

The pregnant patient presented here was a candidate for ECT because she was in an acutely manic state with psychotic features and was not responding to antipsychotic drugs. She had a rapid, positive response to ECT after 2 treatments but experienced cognitive deficits and memory loss. After stopping ECT, the patient soon thereafter exhibited hypomania. She later began weekly treatments and improved dramatically. ECT was discontinued after 9 sessions, with mental status now back to a normal baseline level. The baby was then delivered by cesarean section in good health.

ECT is an underutilized often life-saving treatment for people with psychiatric conditions. It is especially indicated acutely when there is inadequate time for pharmacotherapy and also in treatment-resistant cases. Stigma about ECT is a barrier in our society. However, ECT is usually safe and effective in the treatment of selected patients who are pregnant, and it should be considered in appropriate clinical circumstances.<sup>2,4,5,8,9</sup>

## DISCUSSION

Pregnant patients with bipolar disorder require careful, individualized interventions. Special considerations focus

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