Recommendations for the Use of ECT in Pregnancy: Literature Review and Proposed Clinical Protocol

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BACKGROUND

Psychiatric disorders are common in pregnancy, affecting 15-29% of pregnant women.¹ Untreated depression has negative health consequences for mother and fetus. Electroconvulsive Therapy (ECT) is an effective option for the treatment of severe depression, high suicide risk, catatonia, medication-resistant illness, psychotic agitation, severe physical decline, and other life-threatening conditions.

METHOD

A comprehensive review of the relevant literature regarding both ECT and psychotropic medications in pregnancy was performed, including meta-analyses of randomized controlled trials published in general medicine, anesthesiology, psychiatry and obstetrics journals and guidelines, including analyses of all 4 systematic reviews of use of ECT in pregnancy. The authors also examined the natural course, potential risks and complications from untreated mental illness in pregnancy.

RESULTS

Table 1. Complication Rates of ECT in Pregnancy

		Miller, 1994 ² (n = 300)	Anderson and Reti, 2007 ³ (n = 339)	Leiknes, 2015 ⁴ 1970-2013 (n = 115)	1942-1970 (n = 54)	All years (n = 169)
Maternal						
	Uterine Contractions	2 (0.6%)	12 (3.5%)	14 (30%)	2 (9%)	16 (24%)
	Premature Labor	4 (1.3%)		13 (28%)	6 (27%)	19 (28%)
	Vaginal Bleeding	5 (1.6%)	2 (0.6%)	3 (7%)	5 (23%)	8 (12%)
	Miscarriage	5 (1.6%)	1 (0.3%)	3 (7%)	2 (9%)	5 (7%)
	Abdominal pain	3 (1.0%)	1 (0.3%)	2 (4%)	4 (18%)	6 (9%)
	Preeclampsia	-	-	2 (4%)	-	2 (3%)
	Caesarian section	-	-	9 (20%)	3 (14%)	12 (17%)
	Placental Abruptio	1 (0.3%)*	1 (0.3%)			
Fetal						
	Arrhythmia	5 (1.6%)	9 (2.7%)	13 (54%)	2 (18%)	15 (43%)
	Stillbirth/Death	3 (1.0%)	1 (0.3%)	6 (25%)	2 (18%)	8 (23%)
	Fetal malformations	5 (1.6%)	1 (0.3%)	4 (17%)	3 (27%)	7 (20%)
	Respiratory distress	1 (0.3%)	-	-		1 (3%)
	Billirubinemia	-	-	1 (4%)	-	1 (3%)
	Mental impairment	4 (1.3%)	-	-	2 (18%)	2 (5%)

CONCLUSIONS

ECT is safe and effective for management of many psychiatric disorders in pregnancy. It allows for treatment while minimizing potential adverse effects on mother and fetus associated with pharmacotherapy. Based on changes in physiology that occur during pregnancy, we considered recommendations for treatment modifications in performing ECT in pregnancy and consolidated them into a protocol that can assist clinicians in improving access and safety of ECT for pregnant patients.

Summary of Recommendations for ECT in Pregnancy

Initial Evaluation

- Provide **psychoeducation** to staff to reinforce the safety and effectiveness Ensure facility has capability to treat an obstetric or neonatal complication

Evaluation for ECT

- Consult Obstetrics for **Pelvic Exam**
- Special consideration for risk factors for spontaneous abortion, preterm labor, abruption, and uteroplacental insufficiency
- **Weekly NST** of fetal well-being throughout the entire treatment course or a level 2 ultrasonogram between 18 and 22 weeks of gestational age
- If high risk for preterm labor or complications, ECT can be performed in a **L&D operating room** or labor ward with a Caesarian section tray
- Obstetrician should be aware of the timing of the procedure
- Screening for psychoactive substance use disorder or signs of acute withdrawal

Pre-Procedure

- Discontinue nonessential anticholinergic medications
- Avoid NSAIDs
- **Night before:** administer 30mL 0.3M sodium citrate
- **NPO** 8 hours prior to ECT
- 15-20 min before anesthesia: administer 30mL 0.3M sodium citrate
- 30 min before: ranitidine 50mg or cimetidine, +/- metoclopramide 20mg
- **IV hydration** 12 hours prior: lactate ringer’s or normal saline
- 20+ weeks: elevate right hip with foam wedge
- **Fetal cardiac monitoring** by Doppler ultrasound
- If fetal heart rate decreases, increase O₂ and further displace uterus
- External fetal monitoring for several hours before ECT or NST with tocometer

Peri-Procedure

- Continuous maternal heart rate, EKG, SpO₂, end-tidal CO₂ monitoring
- If concern for contractions: use uterine tocodynamometry
- If late term or high-risk: use continuous fetal monitoring
- Consider intubation, especially after first trimester
- **Preoxygenate** but do not hyperventilate
- **Induction:** propofol 0.75-2mg/kg, methohexital 0.5-1mg/kg, or, if third trimester, consider inhalational anesthetics
- **Paralysis:** succinylcholine 0.5-1.5mg/kg unless contraindicated
- Treat maternal hypertension (e.g. esmolol or remifentanil infusion)
- Treat maternal bradycardia, when indicated, with glycopyrrolate 2mg
- If **fetal heart rate decreases**, increase O₂ and further displace uterus
- If significant desaturation: get maternal ABG during or after ECT

Post-Procedure

- Examine patient for uterine contractions, vaginal bleeding
- If **contractions:** treat with beta-2 adrenergic tocolytics (i.e. ritodrine)
- If **abdominal pain:** treat with IV MgSO₄ 4mg diluted in 100mL saline
- If contractions or vaginal bleeding: postpone further ECT
- Repeat **fetal cardiac monitoring** by Doppler ultrasound
- Repeat external fetal monitoring for up to several hours as needed or NST with tocometer after procedure
- If necessary: weekly fetal NSTs
- If **nausea:** ondansetron, metoclopramide, prochlorperazine, or meclizine
- If **headache** or muscle aches: treat with acetaminophen
- Anticipatory guidance: if fever > 100.4°F or cough, decreased fetal movement, go to nearest emergency room/ obstetrical triage

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