

# Does a ketamine bolus dose compared to a normal saline bolus dose during general anesthesia decrease the incidence and severity of postoperative depression symptoms in radical mastectomy breast cancer patients with mild to moderately severe depression?

Kara McDonald

Nova Southeastern University Anesthesiologist Assistant Program - Jacksonville

## Introduction

- Depression is a cause of morbidity in a wide variety of postoperative patients and can be associated with greater postoperative pain, infections, tumor progression, and poor quality of life. [1] Depression has also been associated with negative clinical surgical outcomes. [2]
- Not only has ketamine been found to have significant antidepressive effects, [3] perioperative administration of ketamine has also been found to significantly reduce postoperative depression scores and pain intensity. [4]
- Past research has shown that breast cancer mastectomy patients have an incidence of depressive symptoms, they can safely receive ketamine in an intraoperative setting, and S-ketamine is specifically effective in decreasing the severity of this patient population's postoperative depressive symptoms. [5]
- The goal of this research is to investigate whether an S-ketamine bolus compared to a normal saline bolus during general anesthesia significantly decreases the incidence and severity of postoperative depression symptoms in radical mastectomy breast cancer patients with mild to moderately severe depression.

## Methods

- Liu et. al in 2020 conducted a randomized and double-blinded research study investigating whether radical mastectomy breast cancer patients with mild to moderate depression had a lower incidence of postoperative depression due to intraoperative treatment with a bolus of S-ketamine after analgesic induction in comparison to their saline-treated counterparts.
- The Hamilton Depression Rating Scale for Depression (HAMD-17) was used to evaluate the severity of each patient's depression.
- Patients classified as American Society of Anesthesiologists (ASA) score of I-II, without additional mental diseases such as schizophrenia or mania, and without severe systemic diseases, were included in this study to limit comorbidity complications that may confound results. Patients were between the ages of 18 and 65.
- All patients underwent radical mastectomy with the same analgesic induction and anesthetic maintenance strategies. The analgesia and surgery procedures were completed by the same treatment blinded providers.
- The S-ketamine group included 101 patients who were given a bolus of 2mL of 0.125mg/kg, while the group that received normal saline included 100 patients who were given a bolus of 2mL of normal saline.

## Results

- The results were significantly lower ( $P < 0.05$ ) HAMD-17 scores in the S-ketamine treated group in comparison to the normal saline treated group at three days, one week, and one month after the radical mastectomy surgeries.

## Discussion

- Liu et. al (2020) confirm that breast cancer patients have an incidence of depressive symptoms, they can safely receive ketamine in an intraoperative setting, and S-ketamine is specifically effective in decreasing the severity of this patient population's postoperative depressive symptoms.
- These results and ongoing supportive research could indicate a change in the protocol of administration of S-ketamine in general anesthesia for radical mastectomy breast cancer patients with mild to moderately severe depression.
- Many more patients who struggle with postoperative depressive symptoms could find relief and likely heal better and quicker due to healthier postoperative behaviors and a decrease in stress and overall poor quality of life.

## References

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