



Original Contribution

Effect of adjunctive dexmedetomidine on postoperative intravenous opioid administration in patients undergoing thyroidectomy in an ambulatory setting[☆]



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Abstract

Study Objective: Two of the most feared complications for patients undergoing thyroid surgery are pain and postoperative nausea and vomiting. Thyroidectomy is considered high risk for postoperative nausea and vomiting, and recent studies have looked at adjuncts to treat pain, limit narcotic use, “fast-track” the surgical process, and enhance recovery without compromising the patient’s safety. One such perioperative medication of interest is dexmedetomidine (Dex), a centrally acting α -2 agonist that has been associated with reducing pain and postoperative opioid consumption. Our aim was to examine the effectiveness of Dex as an adjunctive intraoperative medication to reduce postoperative narcotic requirements in patients undergoing outpatient thyroid surgery.

Design, Setting, Patients and Intervention: After obtaining approval from the Institutional Review Board at The University of Texas MD Anderson Cancer Center, we searched the electronic medical record for the period October 2013 to March 2015 to identify patients who had undergone thyroid surgery in the ambulatory setting under general anesthesia.

Measurements and Main Results: A total of 71 patients underwent thyroidectomy or thyroid lobectomy in the outpatient setting. Of the patients receiving adjunctive Dex, a lower proportion (50%, $n = 9$) received postoperative intravenous opioids when compared with control patients (79%, $n = 42$) ($P = .017$). One patient (5%) in the Dex group required rescue postoperative antiemetics as compared to 11 (21%) patients in the control group ($P = .273$).

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Conclusions: Our data suggest that intraoperative use of Dex reduced narcotic administration in the postoperative period among study population patients undergoing thyroidectomy.
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1. Introduction

Two of the most feared anesthetic complications for patients undergoing thyroid surgery are pain and postoperative nausea and vomiting. Patients undergoing general anesthesia for thyroidectomy who are not given prophylactic antiemetics for postoperative nausea and vomiting (PONV) have an incidence as high as 64%; however, this can be ameliorated by the use of prophylactic antiemetics [1,2]. This is concerning because PONV after thyroid surgery may increase the risk of bleeding, which can lead to potential neck hematoma and subsequent airway obstruction [3]. Although relatively well tolerated, thyroid surgery does result in postoperative pain, which is frequently treated with opioids. However, opioid medications are associated with respiratory depression, PONV, and immune suppression [4]. As with many other surgical procedures, the emphasis on enhanced recovery programs and “fast-track” protocols has led to an increase in outpatient thyroidectomy procedures over the last 25 years. After thyroid surgery, patients are traditionally observed for airway compromise, hemorrhage, and hypocalcemia [5,6]. Postoperative pain or nausea and vomiting may increase the patient’s length of stay in the hospital. Likewise, postoperative pain and nausea/vomiting result in a delay in returning patients to their baseline functional status [3,7].

Recent studies have looked at adjuncts to treat pain, limit narcotic use, “fast-track” the surgical process, and enhance recovery without compromising the patient’s safety [7,8]. The vital role of the anesthesiologist in facilitating an enhanced surgical recovery with the use of such careful perioperative medication is indisputable [9].

One such perioperative medication of interest is dexmedetomidine (Dex), a centrally acting α -2 agonist that has been associated with reducing pain and postoperative opioid consumption. Likewise, it provides adequate sedation with minimal risk of respiratory depression [10,11]. Dex has been described to reduce postoperative rescue pain medication when mixed with a local anesthetic and administered via a regional anesthesia technique [12]. To our knowledge, no published report has previously described the use of intravenous Dex for decreasing postoperative narcotic administration in patients undergoing thyroidectomy, and it does not appear that the use of Dex infusion as an adjunct intraoperative medication has been studied exclusively in a thyroidectomy population. We sought to evaluate the effectiveness of Dex infusion as an adjunctive intraoperative medication to reduce postoperative narcotic requirements in patients undergoing outpatient thyroid surgery.

2. Materials and methods

After obtaining approval from the Institutional Review Board at The University of Texas MD Anderson Cancer Center, we searched the electronic medical record for the period October 2013 to March 2015 to identify patients who had undergone thyroid surgery under general anesthesia in the ambulatory setting. Patients undergoing total thyroidectomy and thyroid lobectomy were included in the study. Patients undergoing thyroid surgery with neck dissection were excluded. All patients received the following: for premedication, midazolam (1–2 mg) and famotidine (20 mg); for induction, lidocaine (60–100 mg), fentanyl (50–100 μ g), propofol (1–2 mg/kg), rocuronium (5–10 mg), and succinylcholine (1–1.5 mg/kg). For maintenance of anesthesia, sevoflurane, acetaminophen (1000 mg), and additional opioid narcotic (total fentanyl equivalent dose range 100–415 μ g) were titrated as needed. Nitrous oxide is not used in our ambulatory facility. Prophylactic antiemetics were administered intraoperatively and consisted of at least 2 of the following antiemetics: ondansetron 4 mg, dexamethasone 10 mg, and promethazine 6.25 mg. For the intervention group, the infusion rate of Dex was 0.3 μ g/kg/h. Postoperative pain and nausea were measured on a visual acuity scale, and the criteria for treatment were pain or nausea greater than 3 of 10 for the administration of opioids and antiemetics, respectively.

For all study-eligible patients, we extracted from the institution’s electronic medical record the following categories of data: demographic data, surgery duration, American Society of Anesthesiologists (ASA) physical status, and postanesthesia care unit (PACU) narcotic and antiemetic administration. For our analysis, we placed patients into 2 categories: those who had received a Dex infusion as part of their anesthetic plan and those who had not (control). Selection criteria for Dex was determined by the attending anesthesiologist. All patients were scheduled as undergoing outpatient thyroidectomies. For the purpose of this analysis, *outpatient* is defined as undergoing recovery in the PACU and being discharged the same day or spending the night in our 23-hour extended recovery unit. To evaluate the effect of adjunctive Dex, primary end points for the study were postoperative narcotic administration and postoperative need for antiemetics in the PACU and in extended recovery.

The Student *t* test was used to determine patient age and body mass index (BMI). Categorical data including race/ethnicity, ASA physical status, and PACU antiemetic administration were evaluated by Fisher exact test. Surgery duration was determined using Wilcoxon rank sum test, and sex and PACU narcotic administration was derived using χ^2 test. Using a post hoc power analysis, we assessed that the difference between study groups in the proportion of antiemetics

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