BILATERAL SUPERFICIAL CERVICAL BLOCKS AS THE PRIMARY ANESTHETIC FOR THE PATIENT UNDERGOING AN EVACUATION OF NECK HEMATOMA AFTER PARATHYROID SURGERY

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Abstract

This is the case of an 80-year-old female who presented for evacuation of a neck hematoma on POD#3 after a parathyroidectomy. Her medical history included coronary artery disease with a drug-eluding stent, off aspirin for 2 weeks. She had a significant hematoma from the hyoid bone extending down to below the suprasternal notch. She reported hoarseness. The anesthesiology team provided regional anesthesia with bilateral superficial cervical blocks, supplemented with minimal sedation for patient compliance. The surgical team used no adjuvant local anesthetic. A deep exploration was performed and significant clot was evacuated. The patient went home safely from the PACU.

Introduction

Parathyroidectomy is a surgery commonly performed on a daily basis in many hospitals throughout the United States. The complications of this surgery have been well described and include postoperative bleeding resulting in hematoma, laryngeal edema, unilateral or bilateral recurrent laryngeal nerve injury, and hypocalcemia[1]. Patients may return to the operating room as a result of these complications, and the anesthesiologist must be prepared to manage these cases in both an urgent and emergent fashion. Furthermore, otolaryngological surgery is commonly associated with airway fire risk, and these cases are no exception. For a fire to occur, there needs to be fuel, oxygen, and an ignition source[2]. The ASA has released a practice advisory for the prevention and management of operating room fires[3], which includes an operating room fire algorithm for both the prevention and treatment of this complication.

There are a variety of issues that must be addressed when creating an anesthetic plan for the patient undergoing evacuation of a neck hematoma. Airway patency is of utmost importance, but the risk of airway fire and the mangement of co-morbid medical conditions must always be taken into account. The anesthesiologist's main duty to the patient is to safely manage the patient during the intra-operative period, however, if one is able to minimize the risk of post-operative complications and improve long term patient outcomes, that must be taken into consideration as well.

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This patient signed written surgical consent which included a statement regarding publication of the surgery/treatment/procedure for medical, scientific, or educational purposes, provided the patient's identify is not revealed. Furthermore, the patient was consented separately for the explicit goal of presentation of the anesthetic management of this case. The authors of this case have the original copy of the patient's consent to the presentation of this case. Both authors contributed to the care of this patient.

Case Description

Our case is an 80-year-old female who is presenting for an evacuation of a neck hematoma. The patient underwent parathyroid exploration and removal of right inferior parathyroid adenoma three days prior. Approximately 36 hours after the surgery, the patient reported she had a coughing fit and then noticed she began to have swelling in her neck and hoarseness. She presented to her surgeon, who performed a flexible fiberoptic endoscopy. This demonstrated moderate laryngeal edema, some slight ecchymosis of the left aryepiglottic fold, normal vocal cord motion, but an overall clear airway. She was admitted to the hospital and scheduled for surgery the following morning.

The patient's medical history was significant for coronary artery disease with a stent in the left anterior descending artery, placed 6 years ago. She had been off of her aspirin for 14 days on the day of this surgery. Her other medical co-morbidities included anxiety, non-insulin dependent diabetes mellitus, hypertension, former smoker, and hyperlipidemia. She had been NPO since the previous evening, and had no complications with prior anesthetics. She was a mallampati 2. Physical exam was significant for a significant hematoma extending from the hyoid bone down to below the suprasternal notch (**Figure 1**).

A discussion was had with the patient, the anesthesiology team, and the surgical team. The patient noted that she was a singer, and manipulation of her vocal cords was of concern to her. The patient was motivated, and was amenable to a regional technique. The risks and benefits were explained to the patient, and it was emphasized that conversion to general anesthesia would be at the discretion of the anesthesiology team.

The patient was brought into the operating room and standard ASA monitors were applied. A fiberoptic tower was in the room, along with an arterial line setup. Glycopyrolate 0.2mg was given in case conversion to general anesthesia was required. The patient was given a bolus of 20mcg of remifentinil for comfort during block placement. Bilateral superficial cervical blocks were placed, with 15ml of 0.5% bupivacaine injected on each side. A low dose remifentinil infusion was started at 0.05mcg/kg/min for patient compliance and to prevent movement during the surgery. A bolus of 30mcg of remifentinil was given before the start of surgery to assist with immobility.

Surgery was performed successfully with a deep exploration of the neck and evacuation of a significant amount of clot (**Figure 2**). No supplemental local anesthetic was given by the surgical team, and no adjuvant bolus sedation was required. The infusion of remifentinil was maintained between 0.02mcg/kg/min and 0.05mcg/kg/min. The patient was awake, responding appropriately to commands, breathing spontaneously, and comfortable throughout the procedure.

Of note, as demonstrated in **figure 3**, we created a unique apparatus designed to provide the patient with oxygen but to minimize the risk of airway fire. The nasal cannula provided the oxygen, the face tent provided the barrier, and the suction at the top of the tent eliminated risk of oxygen pooling. The combination of entrapped oxygen and electrocautery was concerning; therefore, this apparatus was created, and the surgical team used minimal cautery.

Discussion

This case presents multiple issues that the astute anesthesiologist must consider. The most concerning is the patient's airway. The patient had a significant neck hematoma, and reported new hoarseness. However, she had been stable on the floor overnight, with no acute changes. Since this patient was off of aspirin for 2 weeks, it is possible her risk of cardiac complications was increased, as at least one randomized, double blind, placebo-controlled study has shown in high-risk patients undergoing non-cardiac surgery that perioperative aspirin reduces the risk of major adverse

Fig. 1

Demonstrates the extent of the hematoma in this patient, extending from the hyoid bone down to below the suprasternal notch.

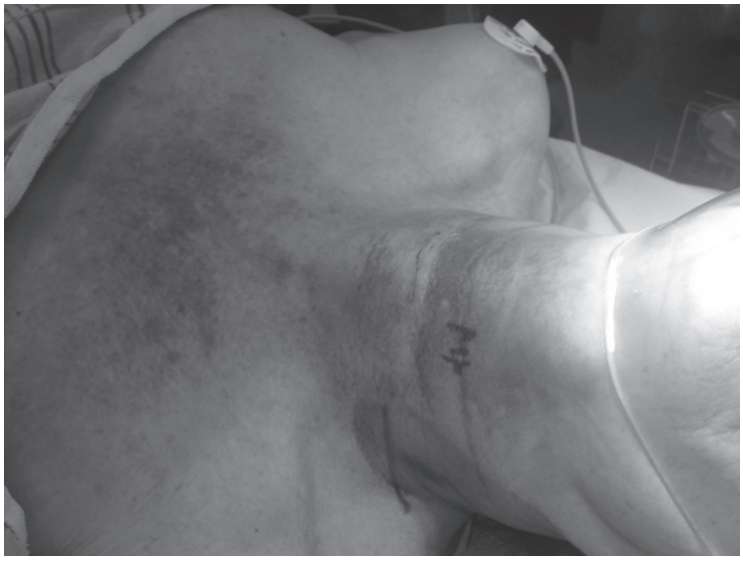

Fig. 2

A deep exploration of the neck and evacuation of a significant amount of clot was performed.

Fig. 3

We created a unique apparatus designed to provide the patient with oxygen but to minimize the risk of airway fire. The nasal cannula provided the oxygen, the face tent provided the barrier, and the suction at the top of the tent eliminated risk of oxygen pooling.

cardiac events[4]. While the surgical stress is not attenuated with this technique, general anesthesia may incur increased risk from variations in blood pressure and manipulation of the airway. The authors had to weigh this risk against the risk of having to convert to general anesthesia intra-operatively. Our patient was motivated, and preferred as little airway manipulation as possible. We have good rapport with our surgeon, who was confident the surgery could be performed in a short period of time. We decided to proceed with a regional anesthetic, and had all the materials necessary to convert to a general anesthetic if it was required.

Furthermore, we were aware of the risk of airway fire in this surgery. Typically, in a general anesthetic it is possible to turn the oxygen down to minimize the oxidative source. Our patient was awake, and although there was minimal risk of an accumulation of oxygen, we made a unique apparatus that applied suction near the patient, minimizing oxygen building and the rebreathing of carbon dioxide. This decreased the risk of operating room fire in this head and neck monitored anesthetic care case.

In conclusion, this case was unique in that a regional anesthetic was given to prevent manipulation of a possibly tenuous airway, and to possibly lower the cardiac risk that this patient was likely incurring having been off aspirin for 2 weeks. Careful planning between the anesthesiology and surgical teams, combined with thorough preparation, contributed to the success of this plan, and a positive outcome for this patient.

References

1. Porter Steven Schwartz, Andrew De Maria, Samuel Jr and Eric M Genden: 14 Thyroid, Parathyroid, and Parotid Surgery. In: Levine, Adam I., Satish Govindaraj, and Jr Samuel De Maria. *Anesthesiology and Otolaryngology*; Dordrecht: Springer, 217-40, 2011.
2. Cohen Neal H, Ronald D Miller, Lars I Eriksson, Lee A Fleisher, Jeanine P Wiener-Kronish and William L Young: Miller's Anesthesia. 8th edition. Philadelphia: Elsevier/Saunders, 2015. Accessed via Icahn School of Medicine at Mount Sinai online library on March 14, 2015.
3. Practice Advisory for the Prevention and Management of Operating Room Fires. Anesthesiology 118.2 (2013): n. pag. Committee on Standards and Practice Parameters. Web. Available at: http://www.asahq.org/~/media/Sites/ASAHQ/Files/Public/Resources/standards-guidelines/practice-advisory-for-the-prevention-and-management-of-operating-room-fires.pdf. Accessed March 14, 2015.
4. Oscarsson A, Gupta A, Fredrikson M, Järhult J, Nyström M, Pettersson E, Darvish B, Krook H, Swahn E, Eintrei C: To continue or discontinue aspirin in the perioperative period: a randomized, controlled clinical trial. *Br J Anaesth*; Mar, 104(3):305-12. doi: 10.1093/bja/aeq003, 2010.