Is Unilateral Vocal Fold Paralysis a Rare Complication of Spinal Anesthesia? A Case Report

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Keywords: Vocal fold paralysis; Hoarseness; Dysphonia; Vagus nerve; Cranial neuropathy; Recurrent laryngeal nerve; Abducens nerve; Intracranial hypotension; Spinal anesthesia complications

Abstract

A 47 year old woman underwent an open reduction and internal fixation of a left ankle fracture under spinal anesthesia. In the recovery room, she noticed a sudden onset of dysphonia. Fiberoptic examination revealed an immobile right vocal fold. Her symptoms gradually improved over the next few weeks with conservative treatment. By the eighth week, her voice had returned to normal. Anesthesiologists should be aware that dysphonia that develops immediately or shortly after spinal anesthesia may represent a unilateral vocal fold paralysis (VFP).

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Case Report

A 47 year old woman underwent an open reduction and internal fixation of a left ankle fracture under spinal anesthesia. The patient refused general anesthesia and intubation because she had undergone an anterior cricotracheal resection for subglottic stenosis seven years earlier. Her only symptom at that time was dyspnea. She had never been previously intubated; she had not experienced any changes in her vocal quality or strength. The cause of her subglottic stenosis was considered to be idiopathic. Her cricotracheal resection had been performed successfully and she had normal vocal fold function postoperatively. The patient was 58 kg and 173 cm in height. She was ASA Class II, not a diabetic, and a nonsmoker. She had no history of augmentation under local anesthesia. Medications included vitamins, calcium, fish oil, and magnesium.

The patient was consented for a spinal anesthetic with peripheral nerve blocks for postoperative pain management. After intravenous sedation with three milligrams of midazolam and 500 mcg of fentanyl were administered incrementally.

At the completion of the three hour surgery, the patient received an ultrasound-guided popliteal-sciatic nerve block utilizing 30 mL of 0.50% bupivacaine. The patient's head position was unchanged from the beginning of surgery. The propofol infusion was discontinued and the patient was returned to supine position. In the recovery room, the patient was alert and without pain or discomfort. She did, however, notice a mild to moderate hoarseness to her voice quality. The patient continued to be free of pain after her spinal had completely worn off; she was discharged to home four hours after surgery.

By the next morning, the patient's voice was breathy, raspy, and rough in quality. Her dysphonia did not improve with voice rest or with fluid intake. By the third postoperative day, she became concerned that she had developed laryngitis and made an appointment to see an Ear, Nose, and Throat (ENT) physician. On postoperative day seven, her ENT physician found an immobile right vocal fold on flexible laryngoscopy. No other abnormalities were seen. The patient did not complain of dysphagia, aspiration, or any symptoms which might be indicative of a post-dural puncture headache. She was given the option of further workup with computed tomography (CT) scan and/or a referral to a specialized laryngologist. She opted for a conservative approach of watchful waiting and agreed to follow-up in two months if no improvement was seen. She was not prescribed corticosteroids or any other medications.

Over the next few weeks, the patient's symptoms of dysphonia began to improve. By the end of the eighth week, her voice quality had completely returned to normal. Because her symptoms had resolved, no further clinic visits or tests were performed. During telephone interviews with the patient at four and five months postoperatively, she reported that she had no further complaints of hoarseness.

Discussion

Vocal fold movements result from the coordinated contraction of a complicated system of laryngeal muscles. An injury to the recurrent
laryngeal nerve (RLN) is necessary to cause a gross VFP. This may occur alone or in combination with an injury to the superior laryngeal nerve (SLN). Laryngeal electromyography (EMG) is a clinically useful tool in the management of laryngeal nerve injuries; it has prognostic value if it is used at least two months after the onset of symptoms [1]. Most of the nerve injuries that lead to VFP arise from three main causes: mechanical trauma from surgery of the thyroid, head, and neck; malignant growth causing pressure on the vagus nerve or RLN; or inflammatory processes, usually viral infections [2-4].

Without an intact RLN, the laryngeal muscles will not be able to open the vocal folds (to breathe or to cough), to close them completely (to protect the airway when swallowing). Hence, patients with a unilateral VFP (to allow vibration for speech), or to close them (to protect the airway when swallowing). Hence, patients with a unilateral VFP (to allow vibration for speech), or to close them completely (to protect the airway when swallowing). Hence, patients with a unilateral VFP (to allow vibration for speech), or to close them completely (to protect the airway when swallowing). Hence, patients with a unilateral VFP (to allow vibration for speech), or to close them completely (to protect the airway when swallowing). Hence, patients with a unilateral VFP (to allow vibration for speech), or to close them completely (to protect the airway when swallowing). 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