Bilateral Hypoglossal Paralysis: An Unreported Risk following Crowe-Davis Retraction

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ABSTRACT

Objectives: To discuss the pathophysiology of tongue paralysis following Crowe-Davis retraction, identify patients who are at increased risk for this complication, and implement steps to prevent this devastating outcome.

Methods: Case presentation.

Results: The Crowe-Davis retractor is used in a large number of procedures involving the oropharynx. A significant subgroup of these surgeries involve patients with sleep apnea who are classified as morbidly obese. Unilateral tongue paralysis has been reported in a few case reports following Crowe-Davis retraction during tonsillectomy, however bilateral paralysis is exceedingly rare. We describe a case report of a morbidly obese male who underwent repair of an oropharyngeal laceration following traumatic attempted intubation and subsequent tracheostomy. The repair was performed transorally using a Crowe-Davis retractor. Postoperatively the patient was noted to have bilateral tongue paralysis confirmed on EMG. The pathophysiology of this injury, identification of patients at increased risk for this complication from oral retraction and how to implement steps in preventing this devastating outcome are discussed.

Conclusions: Ischemia to the hypoglossal nerve may occur in a short time period with devastating outcomes. Obese patients with redundant oropharyngeal tissues and difficult surgical exposures are at an increased risk for this catastrophic complication.

INTRODUCTION

Hypoglossal nerve paralysis is usually associated with other cranial nerve palsies. An isolated hypoglossal nerve paralysis is relatively uncommon and frequently reported in association with tumors. Other etiologies include head trauma, stroke, multiple sclerosis, carotid endarterectomy, tooth extraction, direct iatrogenic injury, orotracheal intubation, laryngeal mask airway, infection, and with otolaryngologic procedures including prolonged direct laryngoscopy and tonsillectomy.

Isolated bilateral hypoglossal nerve injury is exceedingly rare with fewer than ten cases reported in the literature. It has been associated with orotracheal intubation, traumatic neck hematoma, laryngeal mask airway, and tonsillectomy and head trauma. Here we discuss a case of complete tongue paralysis following the use of a Crowe-Davis mouth retractor.

CASE PRESENTATION

This is a case presentation of a 32 year old 400 lb male with a past medical history of sleep apnea, hypertension, diabetes mellitus and morbid obesity who was admitted to the hospital for congestive heart failure. He refused to use his CPAP machine while in hospital for congestive heart failure. He was noted to have continued bloody hematemesis, accumulation of saliva, and dysphagia secondary to inability to propel food to the pharynx. Some patients experience respiratory difficulty due to posterior prolapse of the flaccid tongue into the oropharynx.

Mechanism of Injury

Stretch and compression are often cited as the proposed mechanisms of injury to the nerve. This is most common as the nerve abuts the greater horn of the hyoid bone anteriorly and posteriorly where the nerve traverses the anterior surface of the lateral prominence of the C1 transverse process. Risk of injury appears to be associated with hyperextension of the head with pressure to the postero-lateral tongue and greater horn of the hyoid as seen during intubation, LMA placement, laryngoscopy, or tonsillectomy. The injury seen with our patient was likely secondary to a combination of a difficult intubation, prolonged operating time (45 minutes), and hyperextension of the neck while the mouth retractor was in place. In addition, the abundant oral cavity soft tissue and force needed to open the Crowe-Davis despite paralysis may have contributed to further nerve ischemia.

Two weeks later the patient began to regain genioglossus mobility and was tolerating a mechanical soft diet. Six weeks later he had regained full mobility and passed a tracheostomy capping trial. He was subsequently decannulated and discharged from the hospital.

DISCUSSION

Ischemia to the hypoglossal nerve can occur in a short time period with devastating outcomes. Obese patients with redundant oropharyngeal tissues and difficult surgical exposures are at an increased risk for this catastrophic complication. Appropriate measures such as releasing the retractor intermittently should be taken preoperatively and intraoperatively to help prevent ischemic injury to the nerve.

REFERENCES

7. Stewart A, Lindsay WA. Injury to the hypoglossal nerve following the use of the laryngeal mask airway. Anaesthesia. 2002; 57:264-5.