

Postoperative Facial Nerve Palsy in a Pediatric Patient

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Abstract

Peripheral nerve injury is a well-recognized complication of surgery and anesthesia. However, overall incidence is less than 1% [1,2]. Most commonly affected nerves include the ulnar nerve, brachial plexus, and lumbosacral nerve root [2]. Postoperative facial nerve palsy as a complication of surgery and anesthesia has been documented in the literature, but it is a rare event [3]. The occurrence of any type of nerve injury as a postoperative complication is even less common in the pediatric population [2,3]. In this report, we describe a case of postoperative facial nerve palsy in a pediatric patient after a thoracotomy.

Keywords: Perioperative Peripheral Nerve Injury; Facial Nerve Palsy; Pediatric; Positioning; Mask Ventilation

Introduction

Nerve injury as a complication of surgery and anesthesia is well-recognized. These injuries are not uncommon and can result in significant neurologic deficits that can be long-lasting if not permanent. Based on the American Society of Anesthesiology's (ASA) Closed Claims Project from 1999, 16% of 4,183 claims were for anesthesia-related nerve-injuries [1]. Of 670 cases, only 1% was reported in the pediatric age group (< 16 years) [2]. While postoperative nerve injuries are not rare, its occurrence in the pediatric population is uncommon and not well-documented.

Case Report

A 12-year-old girl with metastatic osteosarcoma of the left femur, presented for a right thoracotomy and resection of a right lower lobe pulmonary nodule. The anesthetic was unremarkable, and the intubation was easily accomplished with a glidescope. Placement of the double lumen endotracheal tube (DLT) in the left bronchus was achieved with fiberoptic visualization. After DLT position was confirmed and secured, the patient was placed in left lateral decubitus position with all pressure points padded per standard protocol. The operative course was uneventful.

Postoperatively, the patient was noted to have a new left sided facial paralysis in the recovery room. Neurology was immediately consulted. Aside from a facial palsy, the patient's neurological exam was otherwise unremarkable. A magnetic resonance imaging (MRI) scan of the brain was performed to rule out intracranial metastasis or other acute intracranial process. The scan did not show any abnormalities. Incidentally, two lesions were found on the patient's neck which were swabbed and sent for culture. The patient was started on prednisone and valacyclovir for 7 days for what was initially presumed to be a facial palsy related to varicella zoster virus (VZV) infection.

Discussion

Peripheral nerve injury (PNI) is a well-recognized complication of surgery and anesthesia. The overall incidence is less than 1%, with a higher documented incidence in cardiac, neuro, and orthopedic surgery [4]. PNI constitutes 12 - 16% of malpractice claims related to general anesthesia [2,5]. Injuries to the brachial plexus and ulnar nerves make up two thirds of PNI claims [2]. Causes of perioperative PNI are multifactorial and include stretch, compression, hypoperfusion, direct trauma, exposure to neurotoxic agents or a combination of these factors [4]. In addition, patient characteristics such as diabetes, hypertension, and tobacco use increase the risk of perioperative PNI [5]. This results in a “difficult to predict and prevent” phenomenon.

Peripheral facial nerve palsy as a complication of surgery and anesthesia has previously been described in the literature [6]. However, its occurrence is uncommon, with only 13 cases documented since the 1950s [3]. All reported cases were in adult patients and attributed to facial nerve injury associated with mask ventilation under general anesthesia [3]. Most cases were associated with long duration of mask ventilation and/or a difficult airway scenario with challenging mask ventilation [3,7,8]. However, a few cases included situations where mask ventilation was easy and unremarkable [3]. While most were unilateral in presentation, some cases involved bilateral nerve palsies. Sensory or motor deficits observed in these cases were due to injury to the facial nerve or mandibular and mental branches of the trigeminal nerve. Mechanism of injury is presumed to be due to excessive pressure applied to the face mask or behind the mandible during attempts to ventilate a patient, usually during a challenging mask ventilation scenario [3].

To the best of our knowledge, this is the first reported case of a pediatric patient sustaining unilateral facial palsy after a thoracotomy. Our patient was initially presumed to have a facial palsy due to VZV infection. However, the swab test returned negative for VZV. Upon follow-up discussion with the neurologist, it was concluded that the facial nerve palsy was likely due to trauma from extrinsic compression of the facial nerve. It was postulated that the patient’s facial nerve injury was due to excessive digital pressure during mask ventilation, direct nerve compression in left lateral decubitus position for the duration of surgery (5 hours), or a combination of both. Reasons supporting direct nerve compression include timing of presentation, unilateral facial swelling, and absence of viral symptoms or other associated Bell’s Palsy symptoms such as pain, tearing, drooling, hyperacusis, and altered sense of taste [9]. The patient showed complete resolution of facial weakness with a return to baseline over a period of eight weeks.

Conclusion

PNI as a complication of surgery and anesthesia is uncommon in children. This is because of greater neural plasticity, shorter recovery distance from site of axon damage to target muscle, and fewer comorbidities in the pediatric population [10,11]. Our case highlights the possibility of postoperative facial nerve injury in a child despite easy mask ventilation and appropriate positioning during general anesthesia. This is important because literature reports a 6 - 7% incidence of difficult mask ventilation in the pediatric age group [12] and risk of facial nerve injury increases with prolonged or difficult mask ventilation [3]. This case also underscores the need for increased awareness and vigilance among anesthesia providers to mitigate risk of positioning injuries during surgery and anesthesia, even in the pediatric population.

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