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Case Report

Vital Role of an Anaesthesiologist in Rendering Safe Anaesthesia in a Case of Parotid Tumor Resection with Obesity: A Case Report

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ABSTRACT

Parotid pleomorphic adenomas are benign salivary gland tumors, which predominantly affect the superficial lobe of the parotid gland. The "pleomorphic" nature of the tumor can be explained on the basis of its epithelial and connective tissue origin. Slowly progressing asymptomatic swelling is the usual presentation of the tumor. Surgical excision of the tumor mass forms the mainstay of treatment, with utmost care taken to preserve the facial nerve. We describe here, a case of an obese male patient who was posted for parotid tumor resection under general anesthesia supplemented with superficial cervical plexus block whilst monitoring both muscle relaxation and nerve integrity.

Introduction

The parotid gland is encapsulated between the superficial and deep layer of its fascia. It is divided into the superficial and deep lobe by a sagittal plane which is defined by the branches of facial nerve. Pleomorphic adenoma is the second most common benign tumor of parotid gland. It totals for about 4-15% of all salivary gland tumors [1]. Male population in the 6th and 7th decade of life is more commonly affected. The etiology however, remains unknown. Although not an uncommon surgery, maintaining integrity of the facial nerve, considering its proximity to the surgical site, could be a challenge. However, with advanced nerve stimulation techniques, this complication can be overcome. We believe, the anesthesiologist is of prime importance in a surgery as this. The anaesthetic considerations in a case of a severely morbid obese patient posted for parotidectomy under general anaesthesia supplemented with superficial cervical plexus block with train of four monitoring and intraoperative nerve integrity assessment, is discussed herewith.

Case Report

A 53-year-old male patient with BMI of 36.6 kg/m^2 and a chronic tobacco chewer presented to the OPD with history of swelling in the left parotid region since 2 years. It gradually increased in size to approximately 3x2cm. FNAC and histopathology reports were suggestive of pleomorphic adenoma. He was a known diabetic on tab metformin 500 mg BD and was recently diagnosed with hypertension and started on tab amlodipine 5mg OD. On airway examination, the patient had a heavy jaw with 2 finger mouth opening and mallampatti grade 3. He also gave history of obstructive sleep apnea. Radiographic images were suggestive of lower zone haziness with atelectatic bands in inferior lingula. Perioperative nebulization with ipratropium bromide and budesonide was done as advised. After thorough preoperative evaluation and optimization, he was taken up for surgery under general anaesthesia with superficial cervical plexus block.

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Routine OT preparation with the ASA standard monitors, along with difficult airway cart, resuscitation equipments and drugs were kept ready. On the day of surgery, after confirming the fasting status and written consent, patient was taken inside the operation theatre and all standard monitors like pulse oximetry, ECG and non-invasive blood pressure cuff were attached along with train of four monitoring with the electrodes placed over the ulnar border of hand. Anticipating difficult airway, RAMP position was given. Following this, patient was preoxygenated with 100% O2 for 3-5minutes and premedication was given according to institutional protocol. Induction was done with inj propofol 2mg/kg and inj atracurium 0.5mg/kg IV. Tru view videolaryngoscopy was used and it revealed a POGO score <33% with cormack lehane grade 3. After intubation and confirmation, maintainance anesthesia was given with O2 +N2O+ desflurane. Then under all aseptic precautions, ultrasound guided superficial cervical plexus block was given with inj bupivacaine 0.25% 5ml. During the course of surgery, the patient was shifted to total intravenous anesthesia with inj propofol 150mcgs/kg/min and inj dexmedetomidine 10 mcgs bolus to facilitate peripheral nerve stimulation. Intraoperatively maxillary nerve block with 5ml of 0.25% bupivacaine was given by the surgeon. Train of four monitoring was done using TOF watch to monitor neuromuscular function. Peripheral nerve stimulator was used to test the integrity of the facial nerve and once the TOF ratio was >0.9, the nerve was stimulated (Figure 1). After assessing the integrity, maintenance dose of inj atracurium was given. Inj paracetamol 1gm IV was given for analgesia. Patient was extubated uneventfully in the OT. Postoperatively, he was shifted to the recovery room and then to the ward. He was discharged on post-operative day 4.

Figure 1- Image showing peripheral nerve stimulation of facial nerve

Discussion

Parotidectomy is not an uncommon surgery. Parotid adenomas are usually benign with an incidence of about 2.4 per 100,000 [2]. Superficial parotidectomy may be conducted under either local anesthesia [3], total intravenous anesthesia or even tracheal intubation using rocuronium as a muscle relaxant with sugammadex as reversal agent [4], if available. However, we preferred general anesthesia with a short acting non depolarizing muscle relaxant, atracurium combined with superficial cervical plexus block and intraoperative maxillary nerve block.

Injury to the facial nerve is the most critical concern in these surgeries. The right identification of the facial nerve and its preservation is the key to avoid any inadvertent facial nerve injury. Preventive measures to preserve the integrity of facial nerve is usually instituted. We had used atracurium, a short acting drug and had monitored neuromuscular blockade using the train of four monitor. Prior to facial nerve stimulation it was made sure that TOF ratio was >0.9 with complete recovery of neuromuscular blockade. The peripheral nerve stimulator was used to stimulate the facial nerve and to assess its integrity.

Despite this, facial nerve palsy is the most dreaded complication after parotid surgery [1,5]. The incidence of temporary facial nerve dysfunction is higher than permanent facial nerve paralysis3. Increased age, inflammatory disease of the gland, long surgical duration, extent of the disease, malignancy and revision surgeries stand a higher risk for injury to the nerve [6-7].

We had added concerns, as our patient was hypertensive, diabetic, had changes on chest x-ray and was obese. Preoperative nebulization was hence advised. Superficial cervical plexus block helped in maintaining stable hemodynamics. Intraoperative blood sugar levels were checked and fluids were given accordingly. According to literature, obesity significantly increases the risk for preoperative, intraoperative and postoperative surgical complications [8]. RAMP position was given using pillow and folded sheets to align the axes for intubation and to promote easier ventilation. It is a known fact that obese patients desaturate faster during apnea periods due to reduced lung volume [9]. Therefore, preventive measures must be taken, including head elevation during ventilation, quick and gentle laryngoscopy with passive oxygenation during intubation. Intubation was done using truview video laryngoscopy. Truview has the advantage of minimal manipulation for optimal visualization of vocal cords with continuous oxygen supplementation through its side port.

Desflurane was used as the inhalation agent, as it has a low fat-blood solubility coefficient and facilitates faster recovery, especially advantageous in obese patients [10].

Peripheral nerve stimulator was used to assess the integrity of the nerves whereas train of four monitoring was used for neuromuscular monitoring. Once the TOF ratio was >0.9, PNS was used to assess facial nerve integrity. As the surgical duration was uneventful and the integrity of the nerve was assessed and intact, the patient was shifted to the recovery room and then the ward.

Conclusion

It is imperative that the anesthetic team acquires all essential and pertinent knowledge for the effective management of obese patients with other comorbidities undergoing high risk surgeries like parotidectomy. Elaborate preoperative evaluation and assessment is also of utmost importance to identify anesthesia related risk factors so as to prepare for appropriate management of any inadvertent complication that could possibly arise throughout the duration of the surgery.

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