

Case Report

Bilateral Adductor Vocal Cord Palsy: Complication of Prolonged Endo Tracheal Intubation

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ABSTRACT

Endotracheal intubation for General anaesthesia is considered as a safe procedure, though few patients do complain of sore throat, hoarseness, cough and dysphagia. The cause for complications are prolonged intubation, hypotension and trauma to cords while insertion of tube. We are reporting a case of bilateral adductor vocal cord palsy following prolonged intubation for abdominal surgery. Though, patient did not require any ventilator support post extubation, 24 hours after surgery. Clinical presentation of patient was only hoarseness treated with speech therapy and steroids.

Key words: prolonged intubation, vocal cord palsy.

INTRODUCTION

Endotracheal intubation is an essential part of general anaesthesia and routinely done procedure. Complications associated are sore throat (40 %), dysphagia, hoarseness of voice and cough which are minor and transient. [1] However when hoarseness is because of vocal cord palsy, it takes time to recover. Majority of cases of vocal cord palsy have been reported following head, neck and mediastinal surgeries. [2] Rarely does a patient get vocal cord palsy after an abdominal surgery. The size of endotracheal tube, cuff pressure, intra operative hypotension, quality and duration of intubation are the contributory factors for vocal cord palsy. [3] We present a patient of abdominal surgery who had post operative vocal cord palsy due to prolonged intubation during surgery.

CASE HISTORY

A 42 year male patient underwent splenectomy with devascularization and

fundectomy for extra hepatic portal vein hypertension. Patient had no medical comorbidities and had undergone a thorough pre anaesthesia check up. Patient was premedicated with Injection Glycopyrrolate Injection midazolam, Injection ondansetron and Injection Ranitidine. Induction of patient was done with Injection propofol and Injection Suxamethonium. Patient was intubated with 8.5 mm (ID) cuffed PVC Endotracheal tube without trauma to cord in single attempt. Patient was maintained on air, oxygen and 1% isoflurane, on controlled ventilation, with injectable vecuronium administered as required. Intraoperative monitoring of IBP, CVP, Spo2, ETCO2, ECG and urine output was recorded. Intraoperatively patient was haemodynamically stable, with no episode of hypotension. Operating time was 10 hours, with patient being on ventilator for 24 hours in the immediate post operative period in surgical intensive care unit. Post extubation patient had hoarseness of voice

and coughing. As patient's hoarseness did not improve postoperatively over 5 days, indirect laryngoscopy was done which revealed the vocal cords to be open (adductor palsy of bilateral vocal cord) left more than right (Figure 1). Patient was started on speech therapy and steroids.



Figure 1: Endoscopic view of cords on post operative day 15

DISCUSSION

Tracheal intubation during general anaesthesia is a safe procedure. Though, long duration of intubation can have deleterious effects like sore throat (40%), laryngitis (3%), laryngeal ulceration, dysphagia, hoarseness of voice and rarely vocal cord palsy. [1] Intubation related vocal cord palsy has an incidence of 0.2%. [4]

Risk factors for the cord palsy are size of endotracheal tube, cuff pressure, duration of intubation, hypotension during surgery, neck in prolonged hyperextension position, patient being a smoker and associated patient co-morbidities (hypertension and diabetes mellitus). [5,3] There is three fold rises in the cord palsy after age of 50 years, two folds in patient with Hypertension and diabetes and 15 fold rises if the ventilator support is more than 6 hours. [6] Defect in the ET cuff manufacturing, that causes irregular inflation of cuff, exerts excess pressure leading to compression of anterior branch of recurrent laryngeal nerve between endotracheal cuff and thyroid cartilage. [7] To understand the mechanism of vocal cord

palsy it is important to know the anatomy. The recurrent laryngeal nerve divides into anterior and posterior branch, of which the anterior branch transversing medial to the thyroid cartilage and supplies the lateral cricoarytenoid muscle and thyroarytenoid muscle as proposed in cadaveric study of Ellis and Pallister. [7] Mechanism of action for vocal cord palsy is the compression of the anterior branch between the inflated cuff and the cartilage.

The cuff of endotracheal tube pressurizes the anterior branch of recurrent laryngeal nerve causing degeneration and paralysis, also the microcirculation gets compromised causing ischaemic degeneration of nerves. Anaesthetic gases rapidly diffuse into the cuff through the semi permeable membrane, mainly nitrous oxide, increasing the cuff pressure. [8]

Preventive measures include instillation of preservative free 4 % lignocaine in the cuff which diffuses and gives local anaesthetic effect, maintains constant intracuff pressure thus preventing occurrence of vocal cord palsy. [5] Placement of the cuff 15 mm below the cords is advisable and not at the level of cords or just below it. [9] Intraoperative monitoring of cuff pressure and periodic deflation and reinflation of cuff is necessary when patient needs prolonged intubation. Cuff pressure should be maintained possibly in range of 15-30 mmHg. [3]

Diabetic patients are more susceptible to vocal cord palsy as they have peripheral neuropathy. In hypertensive patients with atherosclerotic vessels, microvasculature is more vulnerable to the mechanical damage caused by inflated cuff. Age is also a risk factor considering the tissue degeneration with age that may cause cord damage easily as compared to young patients. [6]

Uncommon causes of palsy are respiratory infection, toxic neuritis, use of nasogastric tube and presence of gastro esophageal reflux disease. [1] Differential diagnosis of post extubation hoarseness of voice includes arytenoids dislocation,

synechia of processus vocalis, neuropathies, granuloma and ulceration of larynx, Tapia's syndrome, posterior commissure stenosis and hysterical aphonia. [10]

Vocal cord palsy is managed by speech rehabilitation and steroids. Recovery of patients can take from 6 weeks upto 1 year. [5]

Most of the vocal cord palsy is common in head, neck and mediastinal surgeries. In our case patient did not have any co-morbidities and surgery was abdominal, away from normal anatomy of recurrent laryngeal nerve.

We believe that in our patient prolonged intubation without monitoring of cuff pressure and lack of intermittent deflation of cuff is the cause of pressure neuropraxia leading to bilateral vocal cord palsy

CONCLUSION

Prolonged intubation of patient after surgery can cause rarest of the complication: vocal cord palsy. Many factors contribute to increase in the risk of palsy, which should be considered when patient needs prolonged intubation. It is important to keep the risk factors in mind and take adequate preventive measures to avoid vocal cord palsy.

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