

ACUTE TONGUE ENLARGEMENT SECONDARY TO PHARYNGEAL PACKING AFTER TRACHEAL INTUBATION

- A Case Report -

PRADEEP KUMAR SHARMA^{*}, PRADIPTA BHAKTA^{**},
SINNAKIROUCHENAN SRINIVASAN^{***}, RASHID MANZOOR KHAN^{****}
AND NARESH KAUL^{*****}

Abstract

Acute tongue enlargement is a potentially lethal complication which is mostly reported in neurosurgical cases in sitting position. Very rarely it is reported in supine position. Most importantly it is reported at the end of the surgical procedures. Throat pack used along with tracheal intubation for protection of lower respiratory tract from soiling can lead to tongue enlargement due to obstruction of venous drainage. We are hereby reporting an interesting case of acute tongue enlargement in a patient scheduled for excision of brain tumor in supine position which occurred even before commencement of surgery due to excessive throat pack inserted for some nonessential indication. We thus recommend that throat pack should be used cautiously only when absolutely indicated. Otherwise it can lead to life threatening macroglossia.

Keywords: Acute tongue enlargement/pharyngeal packing/post intubation.

Introduction

Acute tongue enlargement is a rare but potentially lethal postoperative complication^{1,2,5}. It has been reported mostly following traumatic multiple airway instrumentations, neurosurgical, palatal and dental procedures¹⁻⁸. Most of the cases of the tongue enlargement have been reported to occur after surgery in prolonged sitting and prone positions possibly as a result of obstruction to lymphatic and venous drainage due to acute flexion of neck and/or mechanical compression^{1-5,7,8}. Although some cases are reported in supine position⁵⁻⁷, but they occurred or were noticed after the operation. Till date there is no report of acute tongue enlargement before commencement of surgery.

We are hereby reporting an interesting case of acute tongue enlargement after tracheal intubation and pharyngeal packing in a patient scheduled for excision of suprasellar tumor in supine position.

* Senior Registrar, Department of Anesthesia and Intensive Care, Sultan Qaboos University Hospital, Muscat, Oman.

** Registrar, Department of Anesthesia and Intensive Care, Regional Midland Hospital, Mullinger, Westmeath, Ireland.

*** Consultant, Department of Anesthesia and Intensive Care, Sultan Qaboos University Hospital, Muscat, Oman.

**** Senior Consultant, Department of Anesthesia and Intensive Care, Khoula Hospital, Muscat, Oman.

***** Senior Consultant and Head of the Department, Department of Anesthesia and Intensive Care, Khoula Hospital, Muscat, Oman.

Corresponding Author: Dr. Pradipta Bhakta, Department of Anesthesia and Intensive Care, Regional Midland Hospital, Mullinger, Westmeath, Ireland. Phone Number: 00353-894137596, E-mail: bhaktadr@hotmail.com

Case History

24-year-old female patient (43 kg) was scheduled for excision of recurrent right parietal astrocytoma which was operated sixteen years back uneventfully. Her pre-operative assessment and routine investigations were essentially normal and she did not have any neurological deficit. On pre-operative assessment her airway was found to be modified Mallampati class II. Anesthesia was induced with propofol (2.5mg/kg), fentanyl (2 µg/kg) and cisatracurium (0.1 mg/kg). Following adequate muscle relaxation, trachea was intubated with disposable reinforced cuffed endotracheal tube (ETT) (7.0 mm internal diameter) without any difficulty or trauma. Excessive oropharyngeal secretion was noticed during laryngoscopy by junior anesthetist. To counteract that problem he put an oropharyngeal throat pack with standard folded ribbon gauze (1.2 cm width, about 300 cm long) to protect the lower airway from soiling. Anesthesia was maintained with isoflurane and remifentanyl and the depth of anesthesia was adjusted to keep the hemodynamics within 20% of preoperative level. Muscle relaxation was maintained with cisatracurium infusion guided by peripheral nerve stimulator.

After securing the airway, surgeons were allowed to proceed for positioning and followed by surgery. After application of Mayfield frame for positioning, we noticed some swelling and protrusion of the tongue. Neurosurgeon was asked to wait for a while. While we were searching for the cause, swelling progressively increased over the next ten minutes and eventually the tongue protruded out of the oral cavity (figure 1).

Fig. 1

Acute macroglossia seen fifteen minutes after pharyngeal packing



After ruling out usual causes of lingual swelling (i.e. excessive flexion of the neck, allergic reaction, trauma of the tongue), we finally decided to remove oropharyngeal pack on suspicion of causing possible impedance to venous and/or lymphatic drainage of the tongue. Soon after removal of the throat pack, swelling began to subside gradually and tongue returned to near normal size over next fifteen minutes (figure 2). During this entire episode patient's oxygenation and hemodynamics remained within normal limits.

Fig. 2

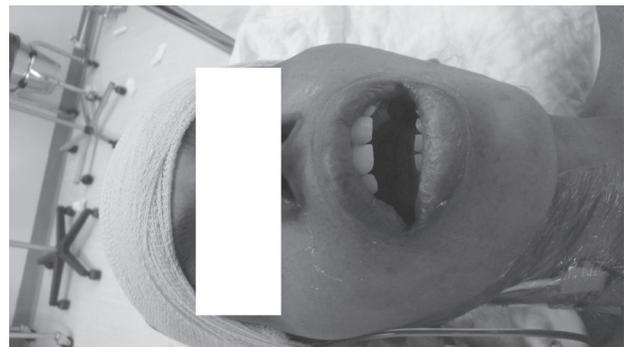
Regression of same macroglossia seen after another 15 minutes



Neurosurgeon was then allowed to proceed. Surgery lasted for about two and half hours. At the end of surgery, residual muscle paralysis was reversed with neostigmine (0.05 mg/kg) and glycopyrrolate (0.01 mg/kg). After achieving adequate recovery condition, patient was extubated. This time the whole upper airway looked normal without any problem of excessive secretion and tongue was found to be of normal size and shape (figure 3). Her post-operative course remained uneventful and she was discharged after ten days.

Fig. 3

No evidence of any macroglossia seen after extubation at the end of surgery



Discussion

Macroglossia is a potentially dangerous but infrequently reported (1% incidence) post-operative complication^{1,2,5}. It was originally reported in neurosurgeries in the sitting position⁴. However, it has been reported in other positions (prone and supine) also like our case^{1,5-8}. Probable cause is believed to be due to obstruction of arterial supply, lymphatic and venous drainage of tongue resulting from extreme flexion of neck, head down position or pressure from ETT, bite block, oropharyngeal and laryngeal mask airways and resultant reperfusion injury induced oedema^{1-5,7-9}. Other possible etiologies are neurogenic, mechanical compression, allergic reactions, hemorrhage and infection^{1-5,8,9}. Risk factors may include obesity, long duration of operation, multiple instrumentation (i.e. tracheal intubation, trans-esophageal echocardiography, esophageal stethoscope, and oropharyngeal airway)^{1-5,7-9}.

Till date there is no literary evidence of macroglossia occurring before the start of the operation. Our patient developed tongue enlargement within ten minutes of tracheal intubation and oropharyngeal packing. This rapid tongue enlargement may be attributed to the acute and near total venous and lymphatic obstruction secondary to the pharyngeal packing^{3,7}. Pharyngeal packing is routinely performed in all intra-oral and nasal surgeries to prevent soiling of respiratory and gastrointestinal tracts without causing much problem. Also throat pack is sometimes used along with reinforced ETT in neurosurgical cases^{5,7}. However, in our case the throat pack was put in an overenthusiastic manner which probably caused near total obstruction of lingual venous and lymphatic drainage⁷. Fortunately, the tongue swelling was detected before commencement of surgery and timely removal of the pack resulted in quick recovery. Had this gone unnoticed till the end of surgery this could have caused unwanted severe upper airway obstruction leading to extubation problem requiring unnecessary prolonged intubation and ventilation in ICU¹⁻⁹.

Management of respiratory distress due to iatrogenic macroglossia occurring after extubation can be at times difficult to impossible threatening the life of

the patient. In such situation, only emergency surgical airway access may save the patient as conventional intubation may be difficult due to altered anatomy and fiber-optic intubation is out of question in this sort of emergency^{1-5,8,9}.

Allergic enlargement of the tongue was not considered in this case as no commonly implicated drugs were used and there were no cardio-respiratory and cutaneous manifestations of hypersensitivity. Since surgery was yet to be started, the possibility of acute neck flexion causing venous obstruction of tongue was also ruled out. Partial obstruction of the lingual venous and lymphatic flow resulting in insidious tongue enlargement due to reperfusion injury essentially develops only after normalization of neck position at the end of surgical procedure and it may take even some more time to develop^{1,3,7-9}. But in our case tongue edema occurred even before the start of surgery or institution of abnormal flexion of head. This pinpoints towards the excessive pharyngeal packing as the culprit for the obstruction of venous and lymphatic flow of the tongue. Fortunately, in our patient the venous obstruction was nearly complete and immediate, and this allowed the early diagnosis of macroglossia and the dreaded postoperative complication could be averted¹⁻⁹. In our case the tongue edema resolved after few minutes ruling out any reperfusion injury. Possibly short duration of obstruction, absence of arterial compression and early and timely diagnosis prevented such dreaded complication and thus we could avert aggressive medical and surgical management which is usually needed in such cases. This also helped us to extubate the patient uneventfully which is very unusual in such cases. Thus timely diagnosis is most important in such case and high index of suspicion should always be kept especially if oropharyngeal pack is also inserted.

Conclusion

Oropharyngeal packing should be used cautiously only when absolutely necessary keeping in mind that it should not be too tight to block the venous and lymphatic outflow, otherwise it can lead acute tongue enlargement which can cause dreaded consequences.

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