

Unusual Complication of Laryngo-Hyoid Bone Dislocation Following Anterior Cervical Spine Surgery under General Anaesthesia

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Abstract

Introduction: Laryngo-hyoid dislocation is a never before described complication after anterior cervical fusion performed under general anaesthesia. Intra-operative laryngeal manipulation leading to dislocation can be life-threatening for the patient because of the resultant substantial change to the upper airway anatomy. The risk factors causing hyoid bone dislocation can be due to calcification of the laryngeal cartilage and morphological changes of the cervical vertebrae along with aging.

Case Report: We report a 53-year-old male patient who underwent anterior fusion of the cervical spine (C3/4, C4/5 and C5/6) for post traumatic cervical PVID performed by the neurosurgery department. Post-operatively, before extubation leftward dislocation of the larynx became apparent. Extubation was therefore postponed and done in CCU next day. The patient suffered an exceedingly rare complication of the surgery – laryngeal dislocation.

Conclusion: If the deformed laryngeal structures had been overlooked and extubation was done as usual after surgery, re-intubation would have been impossible due to the associated swelling, which might have led to disastrous consequences.

Keywords: Hyoid Bone Dislocation; General Anesthesia; Anterior Cervical Spine Fusion

Introduction

Hyoid bone dislocation complicating as laryngeal dislocation is a never before described complication following an anterior cervical spine fusion surgery. Intra operative manipulation of the larynx can lead to its dislocation that can be life-threatening for the patient because of the significant change in the upper airway anatomy. It further can lead to mucosal edema. Advanced gadgets that are used to manage such unanticipated difficult airway like LMAs, video laryngoscopes etc. may fail to secure the airway.

Case Report

A 53-year-old male patient presented to our neuro surgery

department OPD with complaints of weakness in both upper limbs since 4 months and backache and pain in both lower limbs, burning pain in thigh and sole, backache since 3 months at the time of presentation. H/o thinness of palm noted since 1 month. H/o fasciculation present. Motor strength was 3/5 in upper limb and 5/5 in lower limb. Magnetic resonance imaging showed PIVD with C3C4 vertebral body collapse thus establishing the need for anterior instrumentation. Patient was taken for surgery under general anaesthesia. Induction of anaesthesia was performed using propofol 2mg/kg and fentanyl 2mcg/kg followed by inhalational anaesthesia using sevoflurane with MAC of 0.9 to 1.2. Mask ventilation was uncomplicated and 50mg of the muscle relaxant rocuronium was administered. Direct laryngoscopy was done with video laryngoscope and oral intubation succeeded

a traumatically and with visual confirmation (Cormack Lehane 1) on the first attempt. The oropharyngeal anatomy was unremarkable. The intra operative course of general anesthesia was also unremarkable. Cuff pressure was within normal limits. Throughout the intra operative period there was no significant surgical observation that could have led to hyoid bone dislocation. The total duration of surgery was 5 hours.

Post operatively, after the removal of drapes, a swelling was noted on the left side of the neck (FIG1). The initial suspicion was surgery induced hematoma, but the swelling was bony hard and laryngeal structures could be clearly palpated within the swelling, such that intra operative dislocation of the larynx was probable. Video laryngoscope was done where epiglottis was not visible and endotracheal tube and Ryle's tube seen clearly going to left side along the deviation (FIG 2 & 3). Immediate X ray was taken under C-arm guidance which confirmed the diagnosis. Neuro surgeons were informed who while examining, the dislocation was relieved incidentally (FIG 4). Extubation was therefore postponed and a computed tomography (CT) scan was performed subsequently postoperatively.



Figure 1: Showing a large swelling in the left side of the neck.

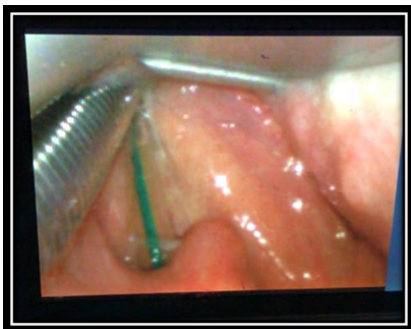


Figure 2: Showing ET tube and ryle's tube deviating towards the side of swelling on C-MAC video laryngoscope.



Figure 3: Depicting the non-visualization of epiglottis in C-MAC video laryngoscope and deviation of ET tube towards the side of swelling.



Figure 4: Showing reduction of swelling.



Figure 5: Showing postoperative ct scan with hyoid bone in position.

Post-operative CT scan revealed hyoid bone in location (FIG 5). Patient was shifted to CCU paralyzed. ENT reference was sought who examined and started the Patient on

antiedema treatment- Inj. Dexamethasone 4mg TDS. Patient was observed in the CCU for 24 hours after which he was gradually weaned off from the ventilator and extubated on POD 2. Patient developed hoarseness of voice on day 3 which subsided over next few days. Patient was shifted to general day on POD 10 and eventually discharged two weeks post op. The patient improved symptomatically with power 5/5 in all the limbs (FIG 6).



Figure 6: Showing postoperative recovery of the patient with 5/5 power in all four limbs.

Patient was advised to immediately report back if signs of respiratory distress, breathing difficulty or hoarseness of voice.

Discussion

Laryngo-Hyoid bone dislocation following cervical spine surgery is an exceedingly rare complication, has not been previously illustrated in the literature, which could result in adverse outcome of the patient. There are references with regards to injuries pertaining to intubation, like, injuries to cricoarytenoid following traumatic intubation or following blunt trauma etc. however there are no references to hyoid bone dislocation leading to laryngeal dislocation following anterior cervical spine fixation [1,2].

The complications like injuries to trachea, larynx, esophagus, underlying vascular structures, wound infection, hematoma, instrumentation failure, failure of preexisting neurological deficits, injury to dura, graft extrusion etc. which are very rare but possible especially during anterior cervical spine instrumentation and the informed consent should be taken prior to surgery.

In a retrospective study, Fountas, et al. described complications of anterior cervical spine discectomy with fusion in 1015 patients that described complications like tracheal and esophageal perforations along with dysphagia, hematoma, laryngeal nerve paralysis and upper airway compression [3]. However, such cases present with hoarseness of voice, difficulty in breathing rather than a bony hard swelling in the neck as in our case.

We diagnosed the patient to have had a laryngeal dislocation which got corrected spontaneously following external manipulation. This rare complication has been described only once in the literature, which was due to osteosynthetic material secondary to hyoid bone getting trapped under the implant [4].

In our case, we speculated the cause of hyoid bone dislocation to be due to excessive intraoperative soft tissue retraction presenting as bony hard swelling on the left side of neck which was confirmed by direct laryngoscopy by c-mac guided video laryngoscope. However, the hyoid bone and hence the larynx got reverted back to its original position while external examination. Although many above described complications can occur, we found no mention of this complication or maneuver treating this complication. A CT scan of neck would have evidentially delineated the underlying pathology better, but it could not be done as the dislocation resolved spontaneously.

Any postoperative neck swelling following anterior cervical spine surgery generally raises the suspicion of operative site hematoma [5]. However, our complication can be kept as rarer differential diagnosis.

This case report puts light on the importance of examining neck and surgical site structures prior to extubation [6]. If such a complication is suspected, then extubation should be deferred till complete reduction is achieved so as to prevent adverse outcomes.

Conclusion

Laryngo-hyoid bone dislocation is a never before heard complication of anterior cervical spine surgery. Such a complication can be life threatening and needs proper vigilance and prior knowledge. This emphasizes the importance of examining the surgical site prior to extubation. Reintubation and/or surgical access to the airway following laryngo-hyoid bone dislocation is challenging to the anesthesiologist. In cases whenever any changes to the airway is suspected, the patient should be deferred from extubation and imaging should be done.

CONSENT FOR PUBLICATION FORM

I, Bhushan Titai Yadav give my consent for information about myself/ my child or ward/ my relative for the publication.

I understand that the information will be published without my/my child or ward's/ my relative's name attached, but that full anonymity cannot be guaranteed.

I understand that the text and any pictures or videos published in the article will be freely available on the internet and may be seen by the general public. The pictures, videos and text may also appear on other websites or in print, may be translated into other languages or used for commercial purposes.

I have been offered the opportunity to read/ see the article.

This consent form will be submitted with the article and will be treated confidentially.

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Date 28.02.2020

Signed [Signature]

Author Name DR. SUHAS A. HODLI

Date 28.02.2020

Signed [Signature]

Please keep this consent form in the patient's case files. The article reporting this patient's details should state that "Written informed consent for publication of their clinical details and/ or clinical images was obtained from the patient/ parent/ guardian/ relative of the patient. A copy of the consent form is available for review by the Editor of this journal."

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