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Case Report

Unexpected challenge: Proseal insertion and intubation complicated by undiagnosed aryepiglottic fold cyst

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ABSTRACT

Airway management has always been the main stay of concern for all Anaesthetists especially when it is an undiagnosed difficult one. Our main stay of the article is to be prepared with all forms of equipment for any and all difficult airways, difficult airway can turn into a nightmare for any anaesthesiologist. Vallecular or aryepiglottic fold cysts are often asymptomatic and harmless as long as they do not cause airway narrowing. To discover a vallecular or aryepiglottic fold cyst after induction of anesthesia on direct laryngoscopy is a potentially life-threatening problem as it involves a challenge for the anaesthesiologist. This report describes the management of a patient with an asymptomatic vallecular cyst that was discovered during inability to ventilate after proseal insertion and visualised with laryngoscopy, prior to which the patient did not present with any airway symptoms even after anesthesia induction and muscle relaxant.

1. Introduction

AIRWAY management is an important part of anesthesia and any difficulty is a nightmare for any anaesthesiologist. Vallecular or aryepiglottic fold cysts are often asymptomatic and harmless as long as they do not cause airway narrowing.

To discover a vallecular or aryepiglottic fold cyst after induction of anesthesia on direct laryngoscopy is a potentially life-threatening problem as it involves a challenge for the anaesthesiologist. This report describes the management of a patient with an asymptomatic vallecular cyst that was discovered during inability to ventilate after proseal insertion and visualised with laryngoscopy.

2. Case Presentation

We are presenting a 28-year-old Man taken up for elective right tibial implant removal. He had no co-morbidities. His previous surgical history included an exploratory laparotomy and tibial nailing under General Anaesthesia with Endotracheal Intubation, two years ago. In the post operative period the patient was shifted to the Intensive Care Unit for elective sedation, ventilation and further management.

His physical examination revealed a normal weight for height. Airway examination showed a normal mouth opening and neck extension, no masses or distortion of the tongue or neck. Chest auscultation revealed bilateral equal normal vesicular breath sounds with no added sounds. Patient refused consent for regional anaesthesia hence planned for general anaesthesia for tibial implant removal. After complete pre-anesthesia Check-up was done and informed consent from the patient was taken the patient was shifted to the operating theatre.

In the operating room he was premedicated with Inj. Ondansetron 4mg I/V and Inj.Midazolam 1mg I/V. After application of routine monitoring devices (5 lead ECG, Plethysmography, Non-Invasive Blood Pressure Monitoring) the patient was preoxygenated with 100%

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oxygen for 3 minutes and Inj. Fentanyl 100 μg I/V was given. Anaesthesia was induced with Inj. Propofol 150mg I/V and check ventilation done, after which Inj. Vecuronium 4mg I/V was given. After 3 minutes of ventilation with 100% oxygen Proseal Laryngeal Mask Airway No. 4.0 was introduced using introducer techique. Ryles tube was passed through drain tube and introducer was removed. Cuff of Proseal was inflated with 25ml of air and patient was connected to the anesthesia ventilator on Volume Control mode of ventilation with Tidal Volume 500 ml, Rate 12/min, PEEP 5 cm H2O and FiO2 50%. The patient however could not be ventilated, there was no visible chest rise and capnography showed no EtCo2 trace. The circuit was immediately checked for leaks, HME and sample line were checked for correct connection to the circuit.

The proseal was deflated and repositioned with finger insinuation technique with ryles tube in situ and cuff reinflated with 30ml air. The patient was again connected to the anesthesia ventilator and continued to show significant leakage with flat line on capnography, so the decision was taken to intubate the patient's trachea. Direct laryngoscopy performed with a Macintosh 3.0 blade; glottis could not be visualised (Cormack-Lehane grade 4). A 2-cm (approximately sized) cyst arising from the right side of the vallecula was noticed which completely obscured the view of the larynxx. Bag mask ventilation was resumed while call for help was sent. Anesthesia technician was asked to get the difficult airway cart. Patient could still be ventilated with mask without an airway. Inj. Propofol 50mg I/V was given, and a reattempt at intubation via direct laryngoscopy with a Macintosh 3.0 laryngoscope blade was done. A gum elastic bougie was inserted below the swelling blindly grating of tracheal rings could be felt while inserting the bougie and so an 8.0-mm I.D Portex PVC endotracheal tube was rail roaded over it. The cuff was inflated and then the bougie removed. Endotracheal tube placement was confirmed with 5-point auscultation and capnography.

Dexamethasone 8 mg was given at the start of the surgical procedure. While the patient remained anesthetized during the procedure, an otolaryngologist was consulted who suggested no active intervention as the patient had not given consent for the excision of the cyst and it was not a lifesaving procedure. The rest of the surgery and anesthesia were uneventful.

After, completion of surgery neuromuscular blockade was reversed with Inj. Myopyrolate (Neostigmine 2.5mg and Glycopyrolate 0.5mg) while patient breathed 100% oxygen. The patient awakened with adequate spontaneous tidal volume; respiratory rate, normothermia, and fully obeying commands, the pharynx was carefully suctioned, and a cook's airway was inserted into the endotracheal tube. The endotracheal tube cuff was deflated, and trachea was extubated. The airway was attached to an external auxiliary oxygen source @6L/min.

His postoperative course was also uneventful, and he was discharged to home on the same day without any airway-related problems apart from a sore throat.

Figure 1: Direct laryngoscopic visualisation of aryepiglottic cyst after intubation

3. Discussion

Aryepiglottic fold cysts are rare and can present to Anesthesiologist as a difficult airway. The documented incidence of Aryepiglottic fold (Vallecular) cysts is in the range of 1 in 1280 to 1 in 4200.[1] As our patient was asymptomatic, it became an unanticipated difficult airway.

Aryepiglottic fold cysts are according to the De Santo Classification of two types the Ductal and the Saccular Cysts. The most common site is the lingual region and confined to the submucous layer. Other sites which these cysts have commonly been found are aryepiglottic fold, true and false vocal cords, arytenoids and pyriform folds. Saccular cysts are uncommon.[2]

Aryepiglottic cysts are benign in nature and also patients may be symptomatic with Obstructive Sleep Apnea or hoarseness of voice or may be asymptomatic as with our patient.[3]

The most common complications which may arise with aryepiglottic cysts are inability to ventilate after giving muscle relaxant, repeated intubation attempts leading to bleeding and oedema and airway compromise, accidental puncture of the cyst which may further lead to difficulty in laryngeal visualisation and aspiration of the cyst contents. Had we been aware of the cyst we would like to go with awake fibre optic intubation.[4]

In this case we would like to highlight the need for all patients to be treated with anticipation of a difficult airway, all anaesthesiologists to be trained in methods to secure an airway in difficult airway patients and also discuss if the patient could not be intubated via direct laryngoscopy. There was no reason to anticipate any difficulty in intubation because the patient had no symptoms preoperatively—the patient's history of previous intubation with no difficulty

as presented by the patient and also in correspondence post-operatively with the concerned Intensivist who had looked after him in his previous admission. In view of his normal airway examination (Mallampati Score of I with Normal fixed teeth, Thyromental Distance of 7 cm and Mouth Opening of 3 finger breaths), previous uneventful general anesthesia and patients unwillingness for regional anesthesia for implant removal, we thought that induction of general anesthesia and Insertion of proseal laryngeal mask was appropriate for our patient. Had we encountered difficulty in check ventilation after administration of propofol prior to giving of muscle relaxant then waking up of the patient or video laryngoscopic guided intubation could have been tried.

If there was difficulty in visualisation of the vocal cords, then aspiration of the cyst via a spinal needle might have been an option or if not the surgical airway in the form of emergency cricothyroidotomy. In comparison to other case reports which show attempt to intubation was either abandoned,[5,6] we were able to intubate the trachea by displacing the pedunculated vallecular cyst externally and via insertion of gum elastic bougie blindly, were able to intubate the trachea with the endotracheal tube. Another rescue measure that could have been used was the insertion of I-gel for rescue ventilation and intubation as reported in previous studies,[7] but I-gel was not available in the OT at that time. We elected to obtain an otolaryngology consultation while the patient was still anaesthetised, and their opinion was to leave it as consent for surgical excision had not been obtained.

Nobutaka Kariya reported a case of difficult airway in a 37-day-old female with a laryngeal cyst during induction of general anesthesia. This shows us that a difficult airway due to obstruction from an aryepiglottic fold cyst. They show that orotracheal intubation was achieved with spontaneous respiration. Preoperative information on the cyst helped them to convert a difficult airway to a routine intubation with prior knowledge due to the anatomical difficulty awareness and pre procedure preperation.[8]

Difficult intubation might occur in patients with no signs or symptoms. Rivo J et al. a patient where laryngeal inlet was obscured by a large vallecular cyst that was discovered during rapid-sequence induction of general anesthesia, causing difficulty in tracheal intubation. They had to wait for the patient to recover from general anesthesia, after which using awake fiberoptic bronchoscope they were successfully able to intubate the patient.[9]

There are many reasons for development supraglottic airway obstruction, these can become critical when general anesthesia is begun. Anesthetic and surgical management includes awake oral tracheal intubation via laryngoscope; awake nasotracheal intubation via flexible fibreoptic bronchoscope; inhalation induction of general anesthesia with direct laryngoscopic intubation; and tracheostomy under local anesthesia.[10]

4. Conclusion

This case would certainly have been managed differently if the presence of the vallecular cyst was known to us prior to induction of anesthesia. For example, regional anesthesia or awake fiberoptic intubation would have been reasonable alternatives.

In summary, there are several causes for an unanticipated difficult intubation during induction of general anesthesia. This case report helps to highlight one such cause—asymptomatic vallecular cyst—and its subsequent management, resulting in successful tracheal intubation.

5. Source of Funding

None.

6. Conflict of Interest

None.

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