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Intraoperative kinking of intraoral polyvinyl chloride tube in supine position: An unexpected complication.

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ABSTRACT:
Unanticipated airway obstruction is a dreadful situation for any anesthesiologists, especially when endotracheal tube is already secured and surgery is going on. Here we describe a case of intraoral kinking of endotracheal tube (ETT) in a 65 year old female patient undergoing Whipple's procedure.We emphasize on the use of a checklist and not to underestimate thermal softening.
Keywords: Airway obstruction, endotracheal intubation

I. INTRODUCTION:

Airway obstruction is a dreadful situation for any anesthesiologists, especially during an ongoing surgery. [1] Reinforced ETTs are used in head and neck surgeries, airway surgeries, and prone position surgeries where kinking is expected. Here we describe a case of intraoral kinking of endotracheal tube (ETT) in a 65 year old female patient undergoing Whipple's procedure where intraoral ETT kinking was noted at 6cm proximal to the cuff. This happened in the least anticipated abdominal procedure where there was no airway handling, and extreme neck positions.

II. CASE REPORT:

A 65 years female patient was undergoing Whipple's procedure under general anesthesia with endotracheal intubation. Standard monitoring and anesthesia protocols were followed; patient was intubated with 7.5mm cuffed ETT. Bilateral air entry was checked and the tube was fixed.

Patient was ventilated with Volume controlled mode and surgery was started. Forced warm air blower with temperature set to 40 degree centigrade was applied near the leg end. Nasal temperature probe was inserted for temperature monitoring. Five hours into the procedure, ventilator triggered high airway pressure and showed that tidal volume not achieved. Monitor showed the delivery of only 100-120 ml. Immediately FiO_2 was made 100% and flow increased to 6 L/min. We have informed surgeons and the procedure was kept on hold. On manual ventilation, capnography appears to be normal and on auscultation, bilateral air entry was present but reduced with no added sound. There were no other hemodynamic changes and saturation was 98-99%. Ventilator tubing, inspiratory and expiratory valves were checked which were fine. HME filter was also appears normal but changed in anticipation of retaining moisture. We decided to do suction of the ETT but to our surprise the catheter could not be passed through. We decided to use ambuscope to see through the ETT and we noticed the change in the lumen of the tube which was flattened and not allowing the scope to pass. We took it out and used gum elastic bougie to improve the patency of the ETT. The airway pressures and tidal volumes improved. Apparently the bougie had straightened the tube at the level of kinking. Since the procedure was about to end, ETT was changed over the bougie before shifting the patient to the ICU.

III. DISCUSSION:

Obstruction of airway in perioperative period is a dreaded condition needing immediate troubleshooting. One of the known causes is kinking of ET tube. Kinking of the endotracheal tube has been reported in surgeries needing prone position [2] and in surgeries needing changing the position of tube after intubation. [3]UseofBair Hugger active patient warming system set at 40C has been shown to soften the ET tube enough to cause kinking.[4]When kinking of the ET tube is anticipated,flexo-metallic tubes are popular alternative to regular PVC tube. However there are

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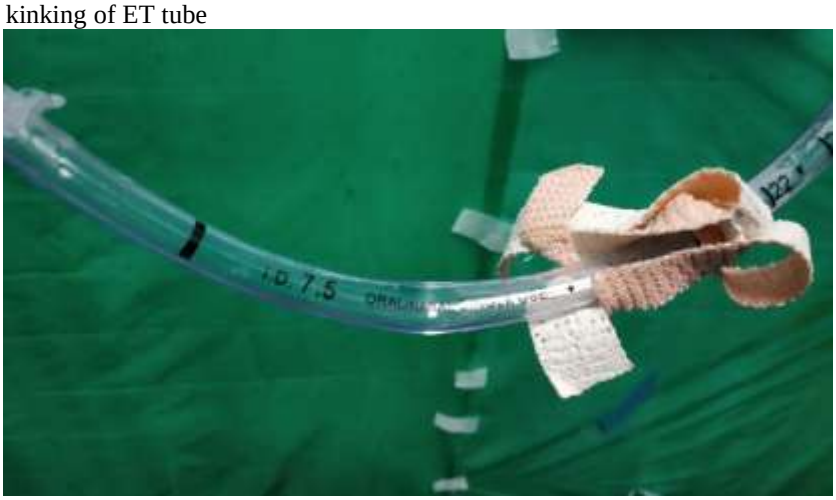
reports of airway obstruction even with use of flexo-metallic tubes, especially in oral/nasal surgeries with the use of the retractors. [5]

Difficulty in ventilation during intraoperative period may be due to multiple causes which can be divided as patient related and Machine related. Various machine related causes are- Gas delivery failure or circuit issues like visible obstruction, entrainment of foreign body in circuit, blood/mucous in the circuit,and HME filter wear-out. Patient related factors include bronchospasm, pneumothorax, laryngeal edema, etc. Troubleshooting the cause needs faster reflex to exclude other causes that may lead to obstruction. Acute difficulty in ventilation in a previously normal lung should make us to focus that the problem is somewhere between the machine till the patient. The 'COVER–ABCD; A SWIFT CHECK checklist may be helpful to point out the cause of crisis.[6] In this study involving 4000 crisis management during anaesthesia, it was found that use of structured 'COVER–ABCD A SWIFT CHECK' would have lead to early recognition and better management in 11% of the cases.Use of such checklist can help in coming to a diagnosis early and hence can reduce time to intervention and early management of crisis.

IV. CONCLUSION:

Anticipation of the problems when they are least expected is what anesthesiologists are trained for. Encountering a kinked ET tube in a procedure where no extreme positions of neck was involved shows that one needs to be vigilant, especially with prolonged procedures and when body warmers are used.

Pictures showing kinking of ET tube



REFERENCES:

[1]. Szekely SM, Webb RK, Williamson JA, Russell WJ. The Australian Incident Monitoring Study. Problems related to the endotracheal tube: An analysis of 2000 incident reports. Anaesth Intensive Care. 1993;21:611–6.

[2]. Palta S, Singh S, Saroa R. Normothermia and kinkingof PVC tube - what is the alternative? Northern Journal of ISA. 2016;1:67-68.

[3]. Hariharan U, Garg R, Sood R, Goel S. Intraoperative kinking of the intraoral portion of an endotracheal tube. J AnaesthesiolClinPharmacol. 2011;27(2):290-291.

[4]. Ayala JL, Coe A. Thermal softening of tracheal tubes:An unrecognized hazard of the Bair Hugger active patientwarming system. Br J Anaesth 1997;79:543- 5.

[5]. Hosseinzadeh N, Samadi S, JafariJavid M, Takzare A. Impending Complete Airway Obstruction from a Reinforced Orotracheal Tube: a Case Report. Acta Med Iran. 2015;53(9):590-2.

[6]. Visvanathan T, Kluger MT, Webb RK, Westhorpe RN. Crisis management during anaesthesia: obstruction of the natural airway. QualSaf Health Care. 2005 Jun;14(3):e2. doi: 10.1136/qshc.2002.004325.