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Case report

The endotracheal tube does not protect the aspiration of a foreign body in the trachea: A case report[☆]



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ABSTRACT

We describe a case of a 26-year-old patient wherein a temperature probe introduced through the nose for intra operative temperature monitoring was inadvertently cut during the ongoing surgical procedure. The missing segment of the probe was retrieved from the trachea which formed an unusual site in spite of the presence of a cuffed endotracheal tube. The present case serves as a reminder that cuffed endotracheal tube does not necessarily protect the airway from aspiration of solid foreign bodies from the oral or nasal airway.

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El tubo endotraqueal no protege contra la aspiración de un cuerpo extraño hacia adentro de la tráquea: reporte de caso

RESUMEN

Describimos el caso del corte inadvertido de una sonda introducida por la nariz para medir la temperatura intraquirúrgica, en un paciente de 26 años. El segmento faltante de la sonda se recuperó de la tráquea, un sitio inusual en vista de la presencia del tubo endotraqueal con balón. Este caso sirve para recordar que el tubo endotraqueal con balón no protege necesariamente a la vía aérea contra la aspiración de cuerpos extraños sólidos provenientes de la vía oral o la vía nasal.

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Introduction

Anesthesia, whether general or regional, impairs the normal balance between heat production and loss.¹ Therefore temperature monitoring has become a standard of care during routine anesthesia and is the component of minimum mandatory monitoring as proposed by American society of Anaesthesiologists.² It is non-invasive and relatively uncomplicated. Nasopharyngeal space is one of the commonly used sites for temperature monitoring.³ We recently experienced an unusual circumstance where a temperature probe that had been introduced through the nasopharynx was inadvertently cut during an oral surgery and the misplaced segment was later retrieved from the trachea.

Case summary

The patient has consented for the clinical details of the case to be published in a medical journal.

A 26-years-old male with oesophageal stricture was scheduled for colonic transposition following failure of repeated oesophageal dilatations. The patient had feeding jejunostomy in situ. The preanesthetic check-up and preoperative investigations were unremarkable. Indirect laryngoscopy in the outpatient department revealed fibrous bands within epiglottis and lateral pharyngeal wall. However, vocal cords could be visualized and were mobile. After written informed consent, the patient was premedicated with oral ranitidine 150 mg and alprazolam 0.25 mg. In the operation theater, the patient was connected to multichannel monitor (S/5™ critical care monitor, Datex Ohmeda, Helsinki, Finland) for monitoring ECG, EtCO₂, NIBP and SpO₂. General anesthesia was induced with intravenous injection of glycopyrrolate 0.2 mg, intravenous injection of morphine 6 mg and intravenous injection of thiopentone 300 mg. Muscle relaxation was achieved with intravenous vecuronium 6 mg and the trachea was intubated with 7.0 mm cuffed polyvinyl chloride (PVC) endotracheal tube (ETT). After securing the ETT, a temperature probe was introduced through the nasopharynx. The length of the temperature probe to be inserted was ascertained by measuring the distance from tragus to angle of mouth. Maintenance of anesthesia was done with O₂:N₂O 40:60, halothane (0.5–1%) and intravenous top ups of vecuronium as required. The intra operative period was uneventful except for the gradual decrease in temperature from baseline of 37–36°C. No active intervention was undertaken for this decline in temperature. Moreover, since the patient was under cover of warming blankets so this decline was presumed to be an aberration. However toward the end of surgery the temperature monitor ceased to display any reading. Since the surgery was near completion and also it was impossible to check the position of temperature probe at that point intraoperatively as it was in the proximity of surgical field, it was decided to wait for another few minutes. We did not check for any fault in monitor. At the end of surgery the temperature probe was withdrawn and distal end of the probe was found to be missing. Direct laryngoscopy and suctioning of the oropharynx failed to locate the missing segment. On comparing with

another probe, the missing segment was found to be nearly 4 cm long. It was decided to locate the missing segment using a C arm since the probe is radio opaque. However examination under C – arm failed to reveal the missing segment. Rigid oesophagoscopy done by the ENT surgeon beyond the pharyngeal anastomosis did not help to trace the missing segment. Patient continued to maintain the vitals including the respiratory parameters. Having searched for the probe at all the possible sites in and around oral cavity with only the tracheal segment left to be seen, an on table rigid bronchoscopy was done after removing the ETT. The missing segment was retrieved from the trachea near the carina with the help of long forceps. The patient was reintubated and upon establishment of spontaneous respiration the patient was reversed and trachea extubated. The post operative period was uneventful.

Discussion

Hypothermia usually follows general anesthesia and is mainly due to impaired thermoregulatory control, vasodilation and exposure to the cold environment in the operation theater which becomes more important in prolonged surgeries.⁴ Therefore temperature monitoring has become mandatory to avoid the deleterious effects of hypothermia which include increased surgical infections, adverse myocardial events, blood loss and transfusion.⁵

Temperature monitoring sites include pulmonary artery, distal part of the esophagus, tympanic membrane, or nasopharynx. Core temperature can be reasonably measured by using oral, axillary, rectal, and bladder temperatures, except during extreme thermal perturbations.^{6,7}

In the present case the temperature probe though was intended to be inserted through the nose into the nasopharynx but must have gone beyond to oropharynx by mistake in inserting and fixing. Since during neck dissection rigid esophagoscopy was done to locate the site of pharyngeal anastomosis, we propose that the temperature probe must have got entangled to and dragged in along with the oesophagoscope till the anastomotic site where it got inadvertently cut by the operating surgeon during dissection and repair. Later on this cut portion might have slipped from the oropharynx site to larynx and then to trachea through the sleeve of the ETT. Therefore the missing segment could not be located anywhere else. In retrospect it was not located under C arm due to presence of multiple drains in the region which added to our confusion of not being able to visualize it properly under the image intensifier. We failed to check any fault with the monitor when the display went blank.

Aspiration of the temperature probe cover into the trachea has been reported leading on to respiratory distress.⁸ But our patient did not exhibit signs of respiratory distress in spite of the fact that a reasonable size of cut portion of temperature probe went inside the trachea. This may be because the whole problem was diagnosed and managed well in time.

Therefore the possibility of such incidents should be kept in mind during neck surgeries and trachea should also be considered as a possible site for foreign bodies in spite of presence of an endotracheal tube.

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Conflict of interest

The authors have no conflicts of interest to declare.

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