

Pilot line damage at the embedded part of a sutured endotracheal tube intubated via a tracheostomy stoma

Sir,

In patients with a tracheostomy undergoing neck surgery, a cuffed endotracheal tube (ETT) is usually intubated via the stoma and often sutured to the chest wall.^[1] During paratracheal manipulation, ETT malposition or surgical damage to the ETT cuff sometimes causes airway leak. ETT cuff leaks during surgery are challenging because the difficulty in ventilation might lead to hypoxemia. Therefore, it is essential to know the causes of ETT cuff leaks. Here, we report a case of a lesser-recognized cause of cuff leak due to the puncture of an embedded part of the pilot line during fixation of the ETT tube inserted via the tracheostomy stoma. Written consent for publication was obtained from the patient.

A 73-year-old man was scheduled for total pharyngolaryngectomy and free jejunal reconstruction for hypopharyngeal cancer. Tracheostomy had been performed 1 month before the surgery due to concerns about suffocation. After induction of anesthesia, a 7.0 mm of wire-reinforced ETT was intubated via the tracheostomy stoma and fixed using adhesive tape (by the surgeon). Four hours after the start of surgery, the ETT was refixed by surgical suturing because of poor ETT fixation. After that, we found a continuous minor airway leak. Pilot balloon inflation was attempted several times but could not resolve the leak; thus, the ETT was replaced with a new one. Immersion of the removed ETT in water showed air leakage from the middle body [Figure 1a]. On closer examination, minor damage to the pilot line on the ETT was observed [Figure 1b]. A needle

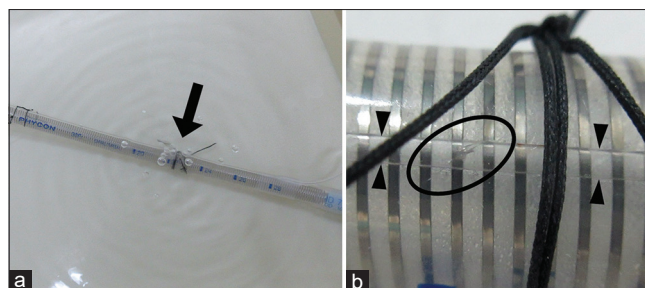


Figure 1: Damaged cuff pilot line embedded in a reinforced endotracheal tube. (a) Air leakage from the middle body of the tube immersed in water (arrow) and (b) Magnified image of the damaged part with a surgical silk thread close to the part sutured to the chest wall (circle) and the embedded cuff pilot line (arrowheads)

puncture during fixation was considered as the cause of the damage.

The causes of ETT cuff leaks include ETT tube malposition and damage to the inflation system, including pilot balloon, pilot valve, and pilot line.^[2] Damage of the embedded part of the pilot line is rare, but it has been reported during osteotomy in maxillofacial surgery.^[3,4] Only one report showed needle injury of the embedded pilot line during Le Fort 1 osteotomy.^[5] Toyosato *et al.* reported that the walls where the pilot line is embedded are thin and can be damaged by the needle, even with weak forces. Thus, damages to the embedded pilot line as well as ETT body during maxillofacial surgery are known complications. However, to our knowledge, this is the first report on needle injury of the embedded pilot line caused by surgical fixation of the ETT. It is crucial to be aware of this complication for not only anesthesiologists but also surgeons

because ETT is often surgically sutured for fixation in patients intubated via tracheostomy stoma. When an airway leak is observed, its cause and severity must be assessed, and the need for ETT replacement should be carefully considered before proceeding the surgical procedures.

In conclusion, when airway leak is observed in patients with surgically sutured ETT intubated via tracheostomy stoma, needle injury of embedded part of the pilot line should be considered.

Declaration of patient consent

The authors certify that they have obtained all appropriate patient consent forms. In the form the patient has given his consent for his images and other clinical information to be reported in the journal. The patient understands that his name and initial will not be published and due efforts will be made to conceal his identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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