

# A Complication of Tracheoesophageal Fistula Treatment with Glue: Endotracheal Cuff Adhesion

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## Introduction

The repair of tracheoesophageal fistula (TEF) requires an important surgical process, surgical ligation of the fistula with a cervical or thoracic approach. Surgical treatment is associated with high morbidity and mortality rates of up to 50% [1].

Recovery is hard and painful for the patient. Different endoscopic fistula treatment techniques, such as electrocautery, tissue adhesives, sclerosants, and laser have been reported. Approximately all endoscopic management was performed by bronchoscopy. Some authors reported compensating results with the use of stents or endoscopic gluing [2,3]. We present a case of endotracheal cuff adhesion, after TEF treatment with histoacrylate and glubran applied around the fistula via esophagoscopy.

## Case

A 27 year-old woman, 50 kg, 170 cm, American Society of Anesthesiologists' (ASA) physical status 1, developed TEF because of a bronchiectasis operation she had had two years ago. The patient's medical history revealed that she coughed while consuming liquids. We performed a barium esophagram in our hospital, which confirmed the presence of a tracheoesophageal fistula at 20 cm from incisor.

She had two hemoclips operations for this circumstance two years ago. However her complains were resistant and she presented to our hospital for

closing TEF operation. The patient did not want to have an open surgery and was prepared for endoscopic gluing. After applying standard American Society of Anesthesiologists' (ASA) monitoring, anesthesia was induced by intravenous fentanyl 1 µg/kg, propofol 2 mg/kg, and rocuronium 0.6 mg/kg administration, after orotracheal intubation with 7.0 endotracheal tube, anesthesia was maintained by 50% O<sub>2</sub>, 50% air and 2% sevoflurane. Controlled mechanical ventilation was provided by tidal volume 8 ml/kg, 10 breaths per minute. After the endoscopic insertion of glubran and histoacryl injection to the fistula, bronchoscopic inspection was made by gastroenterology attendant, no leak was detected and the procedure was completed. The surgery was performed without complications of hypoventilation and hypoxemia throughout the procedure. After her spontaneous respiration returned, endotracheal tube cuff air was reduced, but the tube did not come off. The direct laryngoscopy procedure was performed immediately and it was seen that glubran adhered to the tube cuff and trachea (Figure 1). The cohesiveness was through the vocal cords towards the subglottic area. To prevent the obstruction of trachea, first with the help of forceps, glue slang cleaned out (Figure 2). After glue was removed, the endotracheal tube slightly came out. No residual glue obtained by bronchoscopy. The patient was transferred to the Intensive Care Unit with another orotracheal tube at the end of bronchoscopy. The patients' hemodynamic and respiratuar parameters were stable, and she was extubated after 12 hours. The patient was discharged to a ward 48 hours after surgery, and 14 days later she was discharged from the hospital with no complications. Patients' consent obtained.



Figure 1: Direct laryngoscopy procedure performed immediately and seen glubran adhered to the tube cuff and trachea



Figure 2: With a help of forceps, glue slang to cleaned out

## Discussion

Tracheoesophageal fistula (TEF) is a congenital anomaly of the respiratory tract giving a prevalence rate of 2-86 per 10000 births [3]. TEF is classified according to its anatomic configuration. On the other hand, acquired TEF can be identified as malignant and non-malignant occasions. In non-malignant occasions are such prolonged intubation, passed surgery, and malignant occasions are tumor necrosis by chemotherapy and radiotherapy, laser-therapy. Acquired TEF percentage 0.5% and 4.5%. Surgical repair of TEF in adults has been reported with high mortality, morbidity and recurrence rates, and rarely successful [4].

In congenital fistulas, surgery is still the gold standard. Complications after TEF repair included anastomotic leak, esophageal stricture, and recurrent fistulae and even tracheomalacia. Recurrent fistula is the most common complication after surgery. Recurrence ranges between 3% and 15% [5]. However, endoscopic TEF closure success rates vary between 55% and 80%, which depends on the agent used. Most of endoscopic closures are combined with bronchoscopy.

Histoacryl glue is one of these agents, and can be used endoscopically for TEF closure. Lopes et al. [6] described the usage of histoacryl glue with a high success rate. They reported an eleven-month-old child with a recurrent tracheoesophageal fistula. They injected histoacryl glue via trachea by endoscopic approach, and they reported that the patient was asymptomatic after 10 years [7]. In the literature there are also some concerns about airway inflammation and/or obstruction by glue leaking through the trachea. We described another complication which is very important and has never been reported: adherence of tracheal tube cuff to the trachea. Yoon et al. [8] suggested using positive pressure ventilation under general anesthesia during the procedure to avoid pulmonary complications. In our patient, we used the same methods. As in their cases, there were no changes in oxygen saturation and stable vital signs. Sign of glue drainage was not seen by bronchoscope, because the drainage was around the cuff, and when we reduced the cuff air, the leakage began.

## Conclusion

In conclusion, we believe that this complication is important to remember for maintaining the endoscopic treatment of TEF. We also suggest that after injection of glue, the locality of the endotracheal cuff should be checked.

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