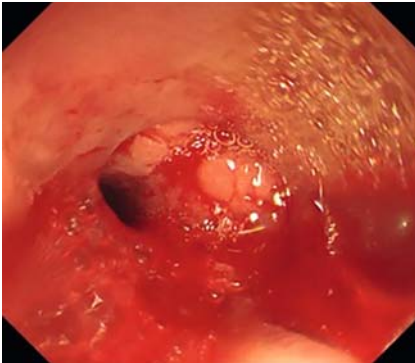


Successful closure of thoracogastric airway fistula with occluder devices and coils under fluoroscopic guidance

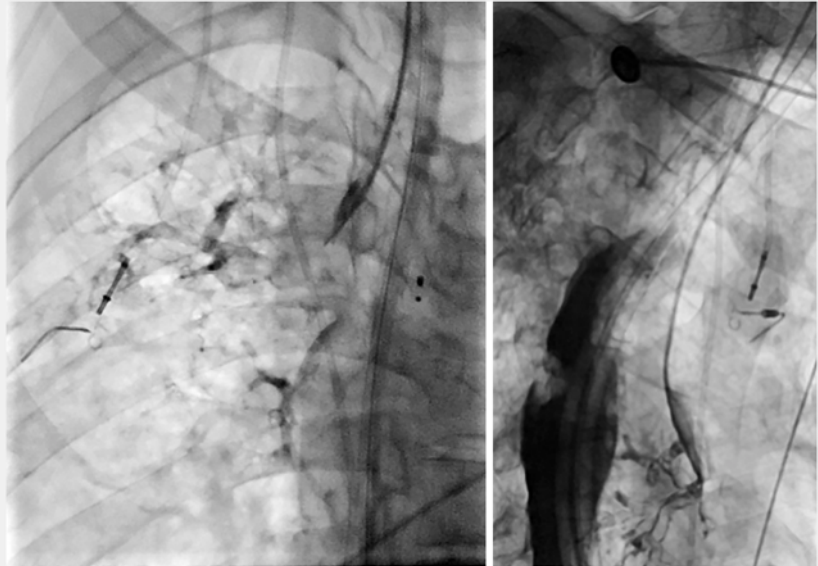
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► **Fig. 1** The fistula located at the superior carina was observed via bronchoscopy.



► **Fig. 2** Chest computed tomography indicated that the bronchus exhibits communication with both the thorax and stomach.



► **Fig. 3** Following the administration of selective esophagography, the development of a bronchial contour was observed.

The application of esophageal stent closure of fistulas is limited in application to thoracogastric airway fistulas due to changes in anatomical structure after surgery. Additionally, the unique location of three-branch orificium fistulas and large orificium fistulas can cause complications such as stent displacement and lax sealing [1, 2].

The patient in this case, a 56-year-old man, experienced a thoracogastric airway fistula after radical esophagectomy. Despite receiving prior esophageal stent treatment, the patient experienced a recurrence of symptoms 5 months post-surgery, worsening his nutritional status and quality of life. Given the patient's large fistula and the potential for incom-

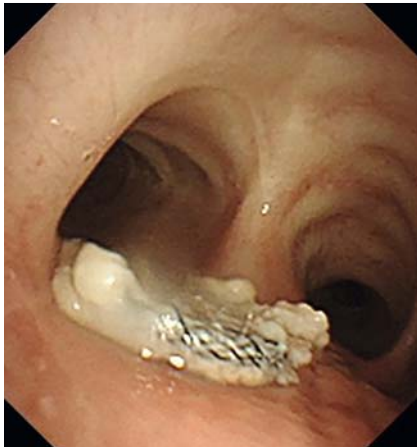
plete sealing with airway stenting, a therapeutic regimen involving coils combined with occlusive devices was proposed.

After determining the location of the fistula (► **Fig. 1**, ► **Fig. 2**, ► **Fig. 3**,

► **Video 1**), occlusion was performed using a 5-Fr vertebral catheter and hydrophilic film guidewire introduced through the fistula on the digestive tract side. A stiff guidewire was introduced



► **Video 1** Thoracogastric airway fistula closed by occluder devices and coils under fluoroscopic guidance.



► **Fig. 4** After a period of 6 months, bronchoscopy revealed the presence of the occluder device at the distal end of the trachea, with yellow sputum adhering to its surface and little granulation hyperplasia.

and sent through the 8-Fr sheath tube to facilitate the introduction of a 9-mm septal occluder, which was accurately positioned and released. Further, the vertebral artery catheter was introduced into the right trachea through the gastropleural and tracheal fistula, and the delivery sheath was exchanged. Sequentially, the 6-mm ventricular septal occlusion device was employed to occlude the bronchothoracic fistula, followed by the 4-mm patent ductus arteriosus occlusion device to obstruct the fistula. Ultimately, the 8-mm patent ductus arteriosus occlusive device sealed the fistula. Additionally, three 6-mm × 14-mm coils were utilized to fill the gap of the occlusion device.

Re-examination demonstrated the successful closure of the thoracogastrotracheal fistula (► **Fig. 4**). The device offers effective physical obstruction for gas and gastric juice isolation, endothelial cell proliferation and granulation tissue adhesion. Compared to the airway stent, it exhibits reduced airway mucosal and ciliary damage, thereby mitigating the complications arising from sputum retention [3, 4].

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Competing interests

The authors declare that they have no conflict of interest.

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