Official Case Reports Journal of the Asian Pacific Society of Respirology
Respirology Case Reports
OPEN ACCESS
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Natural closing of a tracheal tear caused by intubation in a patient with relapsing polychondritis

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Keywords
Relapsing polychondritis, tracheo-mediastinal fistula, tracheostomy.

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Received: 10 December 2020; Revised: 5 January 2021; Accepted: 3 February 2021; Associate Editor: Jasleen Pannu.

***Respirology Case Reports*, 9 (4), 2021, e00721**

doi: 10.1002/rcr2.721

Key message

Relapsing polychondritis (RP) often develops into severe tracheobronchial stenosis with malacia. Although tracheal tears rarely occur by intubation, treatment decisions for tears can be difficult due to airway inflammation in RP patients. In this case, due to advanced age and immunosuppressive treatment, we decided against invasive surgery.

Clinical Image

Airway involvement is an important predictive factor for relapsing polychondritis (RP). RP often develops into severe tracheobronchial stenosis with malacia. Although tracheal tears rarely occur [1], we report a tracheal tear post intubation, which healed without surgery. An 81-year-old female

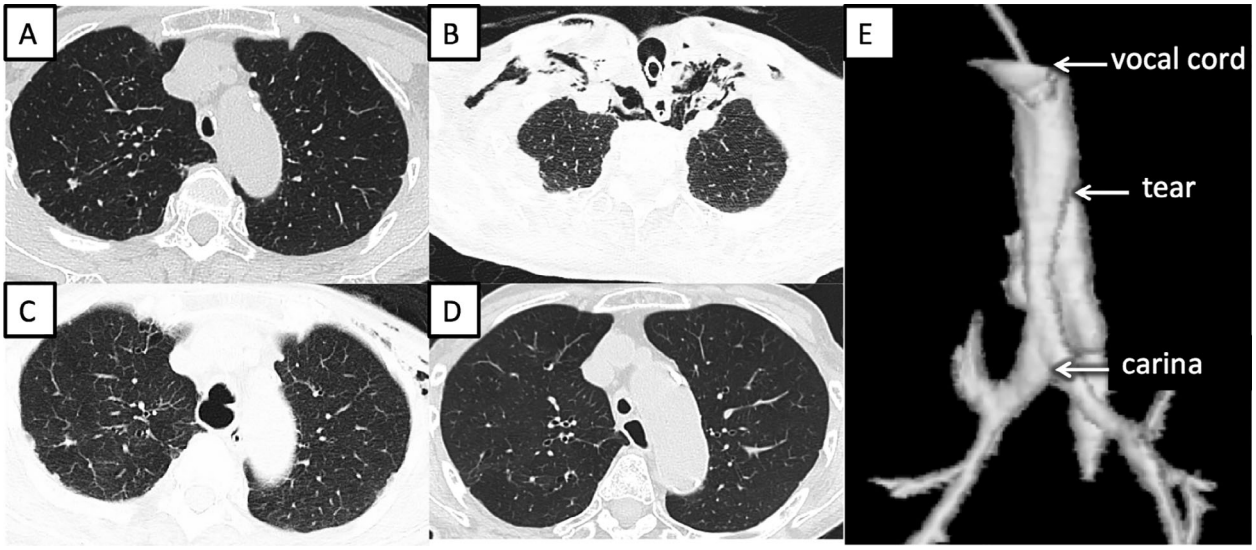

Figure 1. Chest computed tomography (CT). (A) CT revealed a tracheal stenosis with wall thickening before tracheostomy. (B) Mediastinal emphysema developed one month after tracheostomy. (C) A tracheal membrane tear was observed on admission to our hospital. (D) Three months later, the tracheo-mediastinal fistula closed naturally. (E) 3D-CT revealed tracheo-mediastinal fistula.

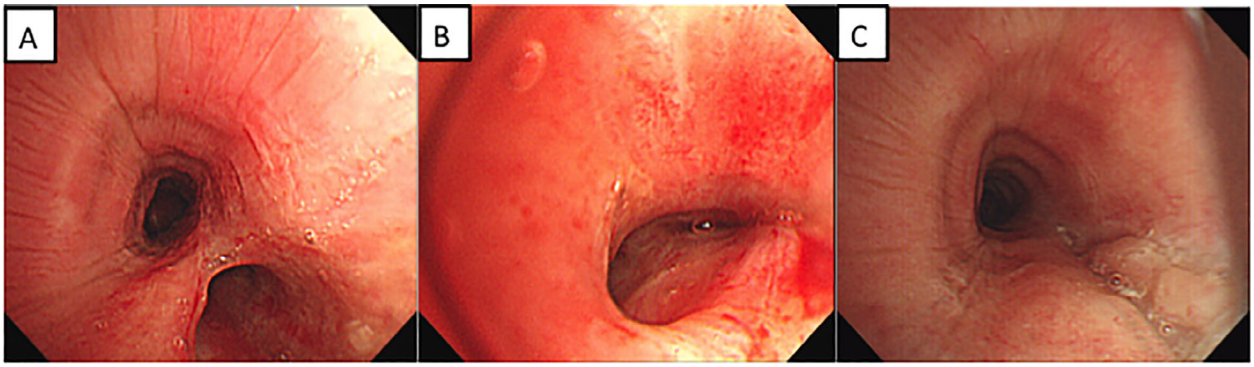

Figure 2. Bronchoscopic findings. (A) A large tear was seen adjacent to the tracheal membrane. (B) Bronchoscopic findings show the tracheo-mediastinal fistula in the tracheal membrane. (C) Bronchoscopic findings show a natural closing of the fistula.

who suffered from tracheobronchial chondritis nine years ago was diagnosed with RP according to McAdam's diagnostic criteria [2]. After her RP diagnosis, oral prednisolone 40 mg/day was administered, but her respiratory condition gradually worsened due to tracheobronchial stenosis and azathioprine was prescribed (Fig. 1A). One month later, she was intubated with an endotracheal tube due to acute respiratory failure caused by tracheobronchomalacia. The average tracheal diameter was 5×9 mm during inspiratory computed tomography (CT); however, both the trachea and bilateral main bronchus collapsed during expiration. Chest CT findings revealed mediastinal emphysema after tracheostomy (Fig. 1B). She was transferred to our hospital where CT and bronchoscopic findings showed a tracheo-mediastinal fistula in the tracheal membrane (Figs. 1C, 2A, B). The width of tracheal tear was 2 mm $\times$ 8 mm and the length of tracheo-mediastinal fistula was 70 mm. 3D-CT revealed the location and degree of the tracheo-mediastinal fistula (Fig. 1E). We decided on a conservative treatment, managing the airway by mechanical ventilation during deep sedation. The tracheal tube was placed at the carina, so as not to affect positive pressure ventilation. Three months later, bronchoscopic findings showed a natural closing of the fistula and she was successfully weaned from mechanical ventilation (Figs. 1D, 2C). Airway patency was maintained by nocturnal positive airway ventilation.

Disclosure Statement

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

Acknowledgment

The authors thank Jason Tonge for his assistance in manuscript preparation.

Author Contribution Statement

Hiroshi Handa contributed substantially for writing of the manuscript. Shinya Azagami and Masamichi Mineshita provided substantial contributions to critical review. All authors reviewed and approved the final version of the manuscript.

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