

Argon plasma coagulation in the management of uncovered tracheal stent fracture

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Background

Endotracheal stents are used in the management of airway malacia or cancers when other measures fail.¹ Tracheal stents, especially those that are uncovered, can be complicated by stent fracture and migration and airway obstruction secondary to irritation, inflammation, and granulation tissue formation.^{1,2}

Argon plasma coagulation (APC) (ERBE™, Tübingen, Germany) is an interventional bronchoscopy technique that is beneficial in treating tracheal stenosis resulting from stent-related granulation tissue formation. While successful APC trimming of biliary and gastrointestinal metallic stents has been previously reported in the literature^{3,4}, its use in managing airway stents has not been described to our knowledge. In this manuscript, we present the case of a patient with severe tracheomalacia treated with endotracheal stenting (Ultraflex™, Boston Scientific, Boston, MA) complicated by stent fracture and significant, symptomatic granulation tissue formation and discuss the utility of APC in managing fractured tracheal stents.



Figure 1. Bronchoscopic view during argon plasma coagulation.

A, Prior to argon plasma coagulation, fractured stent fragments and granulation tissue are present in the tracheal lumen. **B**, The stent fragment is seen to be illuminated with activation of argon plasma coagulation. **C**, After argon plasma coagulation, the evaporated stent fragments are no longer visualized. The remaining granulation tissue was removed after capturing the image.

Case Description

We discuss the case of a patient with tracheal obstruction secondary to tracheal stent in- and over-growth treated with argon plasma coagulation. Previously, the patient developed tracheomalacia secondary to inhalation injury requiring permanent tracheostomy and subsequent bare metal stent placement. In our experience with argon plasma coagulation in 4 previous patients, we observed decreased severity and rates of tracheal obstruction after stent trimming. While trimming exposed stent fragments may decrease granulation tissue formation and tracheal obstruction, the potential negative effects of positive pressure ventilation and the presence of metal vapor in the airways remain unclear.

Learning Objectives

1. Describe the role of argon plasma coagulation trimming of displaced bare metal tracheal stent fragments in patients with tracheal obstruction secondary to stent in-growth and over-growth.
2. Define the problem of tracheal obstruction secondary to displaced and/or projecting bare metal tracheal stents.
3. Identify the potential pitfalls of metal evaporation in the tracheobronchial tree as a result of argon plasma coagulation use.

References

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