

Early experience with polydioxanone biodegradable tracheobronchial stenting of adult post-lung transplant airway stenosis

ID: 463

Nora Mayer*¹, Periklis Perikleous², Nisar Asadi¹

¹Royal Brompton & Harefield Hospital, Part of Guy's and St. Thomas NHS Foundation Trust, Harefield, United Kingdom, ²Barts Health NHS Trust, Department of Thoracic Surgery, United Kingdom

Background:

Airway stenosis following lung transplantation (LTX) adversely affects patients' quality of life and increases mortality. Established treatment options include bronchoscopic dilatation, debridement, stenting and surgical resection. The aim of the study was to evaluate the efficacy of the biodegradable stents compared to conventional metal stents, which are considered last reserve in immunosuppressed patients due to risk of bacterial and fungal infection, formation of granulation tissue and erosion into the airways.

Materials and methods:

Patients diagnosed with bronchial stenosis post LTX between 05/2019 and 01/2021 at our tertiary care centre were included. Fully uncovered, customized, biodegradable (BD), polydioxanone (PDS) stents with atraumatic flared ends to reduce migration were positioned through rigid and flexible bronchoscopy. Microbacterial and fungal growth was monitored in routine surveillance bronchoscopies. Respiratory function tests, number of antibiotic courses and number of readmissions were used to measure outcomes.

Results:

Four biodegradable stents were inserted in two cystic fibrosis patients with right bronchus intermedius stenosis (patient A, 49yo male, stenosis diagnosed three months post LTX; patient B, 21yo female, stenosis diagnosed four months post LTX). Both patients underwent multiple balloon-dilatations prior to BD stent insertion. Patient B required a bridging bare metal stent for four weeks. BD stent diameters were 10x20mm. No complication including bleeding, perforation or stent-displacement was observed. Patient A responded with relief of clinical symptoms and significant improvement of pulmonary function test post stenting (Δ FEV1 1.7l to 3.4l). No unplanned readmission was observed after BD stent insertion and no antibiotic treatment was required within 11 months follow-up. Patient B remained an inpatient throughout the treatment with continuous antibiotic treatment due to an additional complex left sided airway stenosis.

Conclusion:

Biodegradable customized tracheobronchial stenting is a safe option for treatment of post-LTX airway stenosis with restored patency of the airways. Prospective and randomized trials are required to confirm our early favourable experience and confirm reduction of infective complications and unplanned readmissions.

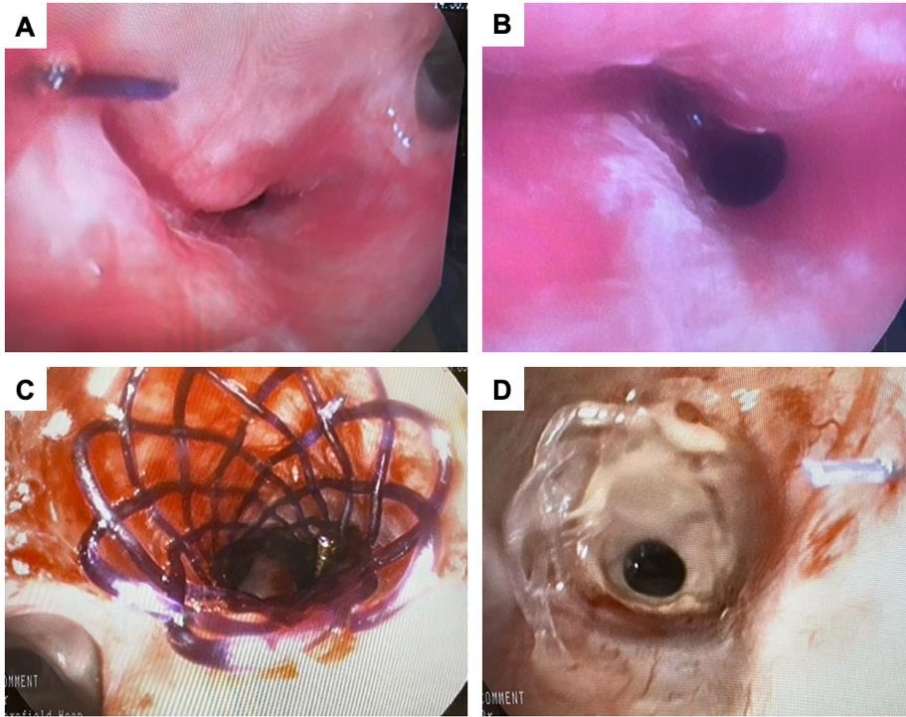


Figure. Bronchus intermedius stenosis in patient A after lung transplantation (A), after several balloon-dilatations (B), biodegradable SX-Ella stent insertion (C) and 12 weeks after stent insertion (D).