

Performance of a Self-Expanding Silicone Stent in Palliation of Benign Airway Conditions*

Thomas R. Gildea, MD, FCCP; Sudish C. Murthy, MD, PhD, FCCP;
Debashish Sahoo, MD; David P. Mason, MD; and Atul C. Mehta, MBBS, FCCP

Introduction: The Polyflex stent (Boston Scientific; Boston, MA) is a self-expanding, thin-walled, silicone stent. Its use has been described in the management of patients with malignant airway obstruction, yet reports of its use for treatment of benign airway conditions are rare.

Study: We report a retrospective review of our experience with the Polyflex stent in the management of benign airway conditions.

Results: A total of 16 stents were deployed in 12 patients. The indications for the stent placement included the following: anastomotic stenosis following lung transplantation (LTR) [four patients]; tracheal stenosis (three patients); tracheobronchomalacia (two patients); tracheobronchopathia-osteochondroplastica (one patient); relapsing polychondritis (one patient); and bronchopleural fistula (one patient). Even though immediate palliation was established in most cases (90%), the incidence of complications was 75%. Stent migration was the most common consequence, with time to the event ranging from < 24 h to 7 months. One stent was expectorated within < 24 h. One patient coughed up a portion of the inner lining of the stent 7 months after its placement. Emergent bronchoscopy was required in four patients for mucous impaction. The complication rate was 100% in patients with LTR-related anastomotic stenosis.

Conclusion: The use of the Polyflex stent for the treatment of benign airway conditions is associated with a high complication rate. We have abandoned its use under such conditions in our practice. (CHEST 2006; 130:1419–1423)

Key words: central airway obstruction; lung transplantation; Polyflex stent; silicone stent

Abbreviations: BPF = bronchopleural fistula; CAO = central airway obstruction; LTR = lung transplantation; RB = rigid bronchoscope; RP = relapsing polychondritis; SEMS = self-expanding metallic stent; TBPOCP = tracheobronchopathiaosteochondroplastica

Over the past decade, significant progress has been made in the palliation of central airway obstruction (CAO) caused by unresectable malignant conditions as well as by benign conditions. Although airway obstruction is more frequently encountered as a result of malignancy, stenosis following lung

transplantation (LTR) and from benign diseases are being recognized with increasing frequency. In the latter groups of patients, the placement of airway stents could provide rapid and long-term relief of symptoms.

Stents are generally of two types, metallic and

*From the Departments of Pulmonary, Allergy & Critical Care Medicine (Drs. Gildea, Sahoo, and Mehta) and Cardiothoracic Surgery (Drs. Murthy and Mason), Cleveland Clinic Foundation, Cleveland, OH.

Drs. Murthy, Sahoo, and Mason have no conflict of interest related to the contents of the article. Dr. Mehta is a member of Medical Advisory Board of Alveolus Corporation (Charlotte, NC). Drs. Gildea and Mehta are participating in a clinical trial on the Alveolus stent, with the per-case cost provided to the Cleveland Clinic. Neither Dr. Gildea nor Dr. Mehta has received financial support from the Alveolus Corporation.

Manuscript received February 7, 2006; revision accepted April 12, 2006.

Reproduction of this article is prohibited without written permission from the American College of Chest Physicians (www.chestjournal.org/misc/reprints.shtml).

Correspondence to: Atul C. Mehta, MBBS, FCCP, Medical Director-Lung Transplantation, Head Section of Bronchology, Vice-Chairman, Department of Pulmonary Allergy & Critical Care Medicine, The Cleveland Clinic Foundation, 9500 Euclid Ave, A-90, Cleveland, OH 44195; e-mail: mehtaa1@ccf.org

DOI: 10.1378/chest.130.5.1419

silicone, with each having its own advantages and disadvantages. Currently, no ideal stent exists, and investigations involving a variety of stents continue to establish their appropriate role in the management of CAO.^{1,2}

The Polyflex stent (Boston Scientific; Boston, MA) is made up of polyester monofilaments and an inner silicone lining, and has potential advantages over the other stents. Its self-expanding property makes it easier to deploy, and the thin wall structure provides a larger lumen than the other silicone stents. Moreover, unlike metallic stents, this stent can be more easily removed if required. Thus, it could be an important therapeutic adjunct for patients with inoperable benign airway conditions and relatively better prognosis. We report our experience with the Polyflex stent for this indication.

MATERIALS AND METHODS

We conducted a retrospective review of the medical records of all patients in whom a Polyflex stent was used to treat a symptomatic benign airway condition. The decision of inoperability was made by a multidisciplinary team (*ie*, pulmonologists, thoracic surgeons, and otolaryngologists), and the reasons included the following: medical contraindications; extent of the disease; or failure of prior surgery. Stent placement was thought to be the only therapeutic option for these patients.

A CT scan of the chest aided the selection of a stent with an appropriate diameter. Stents were oversized by 1 to 2 mm compared to the desired lumen; the latter was based on the proximal extent of the abnormality. The length of the stent was based on a direct measurement of the obstructed segment using a flexible bronchoscope. Depending on the degree and type of the stenosis, dilation of the involved airway was performed either using a rigid bronchoscope (RB) or a balloon prior to the stent placement. Endobronchial electrocautery was used to cut concentric-type, web-like stenoses, if indicated. All stents were placed via an RB or a suspension laryngoscope under general anesthesia and fluoroscopic guidance using a team approach.

RESULTS

Patient demographics, primary diagnosis, indication for stent placement, and the location and size of the stent are described in Table 1. Stent-related outcomes, the duration of follow-up, and complications are described in Table 2.

A total of 16 stents were placed in 12 patients. In 4 of the 12 patients, a second Polyflex stent was placed due to migration following an initial satisfactory placement. The stent sizes varied from 10 × 20 mm to 22 × 80 mm. The indications for stent placement were LTR-related anastomotic stenosis,³ intubation-related or tracheostomy-related tracheal stenosis,⁴ idiopathic or COPD-related tracheobronchomalacia,² tracheobronchopathia osteochondroplastica (TBPOCP),¹ bronchopleural fistula (BPF),¹ and diffuse tracheobronchial involvement with relapsing polychondritis (RP).¹ The patient with RP had not responded to medical management or to therapy with nocturnal continuous positive airway pressure. In three patients, preexisting self-expanding metallic stents (SEMSs) were replaced with Polyflex stents due to metal fatigue. A total of five patients required either the use of electrocautery and/or dilatation prior to the stent placement. The stents were placed across the stenotic area or as a bridge between the left main bronchus and the trachea in the case of a patient with a BPF involving a right pneumonectomy stump. Ideal deployment was achieved in 11 of 12 cases (90%); in a patient with a right mainstem anastomotic stenosis (case 8), multiple balloon dilatations and the placement of several stents of various diameters failed to result in adequate seating across the stenosis. This patient was eventually treated with an SEMS.

All successfully treated patients were prescribed

Table 1—Demographics, Indication, Location, Numbers, and Size of the Polyflex Stents*

| Case No./Patient Age, yr/Sex | Disease | Indication | Location | Stents, No. | Size, mm |
|------------------------------|---------|------------|-------------|-------------|----------|
| 1/37/M | TBPOCP | S | Trachea | 1 | 22 × 80 |
| 2/34/F | LTR | S | LMB | 2 | 12 × 30 |
| 3/66/M | COPD | Mal | Trachea | 1 | 22 × 80 |
| 4/65/M | LTR | S | LMB | 2 | 12 × 30 |
| 5/64/F | TS:PI | S | Trachea | 1 | 14 × 30 |
| 6/55/M | TS:PT | S | Trachea | 2 | 18 × 30 |
| 7/59/F | TS:PI | S and Mal | Trachea | 1 | 16 × 30 |
| 8/22/F | LTR | S | RMB | 1 | 10 × 20 |
| 9/50/M | LTR | S | LMB | 2 | 12 × 30 |
| 10/58/F | COPD | Mal | Trachea | 1 | 18 × 80 |
| 11/60/F | BPF | BPF | Trachea-LMB | 1 | 18 × 60 |
| 12/58/F | RP | Mal | LMB | 1 | 14 × 40 |

*M = male; F = female; S = stenosis; Mal = malacia; LMB = left main bronchus; RMB = right main bronchus; PI = postintubation; PT = posttracheostomy; TS = tracheal stenosis.

Download English Version:

<https://daneshyari.com/en/article/2905464>

Download Persian Version:

<https://daneshyari.com/article/2905464>

[Daneshyari.com](https://daneshyari.com)