

CASE REPORT

CASE REPORT ON TRACHEO-BRONCHIAL STENTING: A RARE PROCEDURE

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Abstract:

In the expanding era of interventional medicine, tracheo-bronchial stenting has emerged as an exigent procedure with new ray of hope. The most common indications for stenting are to minimize extrinsic airway compression from mass effect, maintain airway patency due to intrinsic obstruction or treat significant nonmalignant airway narrowing or fistula. It plays an important role as a bridge to additional tumor-specific therapies, especially in chemoradiotherapy-naïve patients. Our patient, a 66-year-old lady with history of recurrent oesophageal carcinoma treated with chemotherapy, was suffering from increasing breathlessness with presence of stridor. Tracheo-bronchial stenting (Y-stenting) was done successfully in this patient to relieve her tracheal stenosis as observed in bronchoscopy. We report this case as it highlights the first ever Y-stenting in Bangladesh, might cultivate more feasibility towards such intervention in different centres.

Keywords: Tracheo-bronchial stenting, extrinsic airway effect, Ca oesophagus.

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Introduction:

Advancements in interventional pulmonology have led to significant refinements in airway stents, transforming treatment options for patients with obstructive airway diseases. Through extensive research and accumulated clinical experience, clinicians now possess nuanced insights into the selection, placement, and management of airway stents. These advancements have not only improved the efficacy and safety of stenting procedures but also enhanced patient outcomes by minimizing complications and optimizing long-term management strategies¹. Interventional pulmonologists can now tailor stent selection based on individual patient characteristics and disease profiles, ensuring a more personalized approach to treatment¹. The first dedicated tracheobronchial silicone stent was designed by the French pulmonologist Jean-Paul Dumon.² Over the years, more than 20 types of tracheobronchial stents are now available, in metal, mesh, or silicone

rubber; insertion usually can be accomplished by fiberoptic bronchoscopy without general anesthesia. Careful patient selection, choice of the correct stent, and an experienced bronchoscopist are important determinants of success.³ The benefit of airway stents is particularly seen in the short-term period where they provide symptomatic improvement and have low complication risk. The major impediment is excessive granulation tissue and tumor ingrowth, which occur primarily after 30 days.⁴ Y-stent insertion provides relief of the dyspnea and sustained improvement in quality of life for patients with central airway obstruction involving the carina, distal trachea, and proximal main stem bronchi.⁵ Y-stents are effective in restoring airway patency in both endoluminal obstruction and extrinsic compression of the airway.

Case Report:

Our patient, a 66-year-old lady from Chandpur, Bangladesh was admitted into Bangladesh Specialized

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Hospital (BSH), Shyamoli, Dhaka, with increasing shortness of breath and stridor for 1 month. She was a known case of recurrent oesophageal carcinoma (infiltrating squamous cell carcinoma) since 2 years & was on multiple chemotherapy schedule. Six months after getting the last chemotherapy, she became very weak, dyspneic along with developing new onset stridor. A contrast CT scan of chest revealed tracheal compression. In the meanwhile, She developed local recurrence of the tumour & axillary and supraclavicular lymph node metastasis, further chemotherapy was planned by dept. of oncology. By the way, she had developed persistent hypokalaemia (Type 1 Distal Renal Tubular Acidosis due to platinum based chemotherapy) & was continuously on potassium replacement. When she came to us, we found her very dyspneic, maintaining oxygen saturation 93% with 3 litres oxygen. Due to her ongoing

breathlessness, immediate bronchoscopy was done and it revealed (Fig.1) tracheal stenosis from the mid part onwards and the scope couldn't be negotiated further. Written informed consent was taken from the patient & a Dumon Y-stent was deployed in the trachea & bronchi (Figure 2 & Figure 3). Lower half of the trachea was found compressed along with infiltration of the wall and carina by mitotic lesion. After this procedure, the respiratory symptoms were immediately improved. The patient was taken to the recovery room and her vitals were normal with no need of oxygen support. Afterwards, in collaboration with the department of Oncology, further radio-chemotherapy had been planned after 2 weeks following the procedure. Patient remained alive without recurrence of respiratory distress for 2 months to date after the airway stent emplacement.

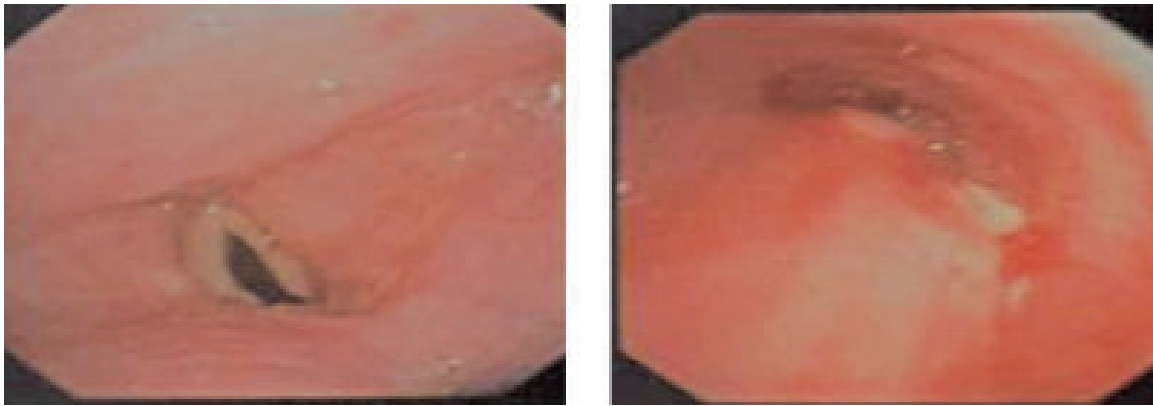


Figure 1: Pre-stenting view of tracheal stenosis.

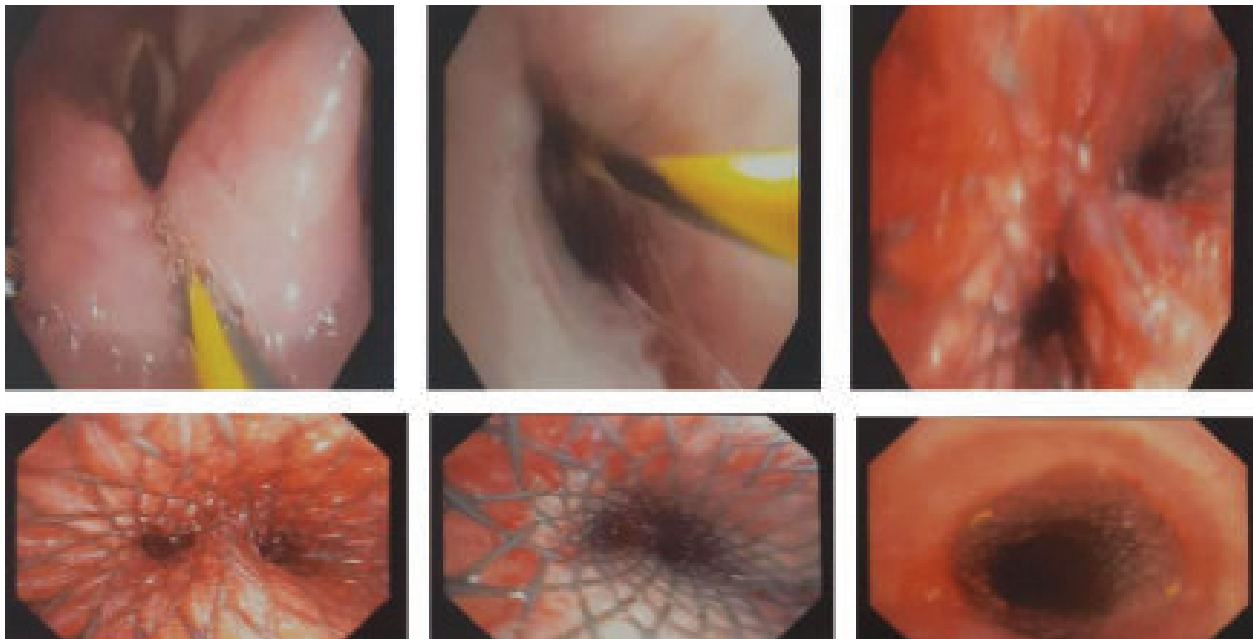


Figure 2: Lower half of the trachea was found compressed along with infiltration of the wall and carina by mitotic lesion. Y-stent was deployed in the trachea and bronchi.

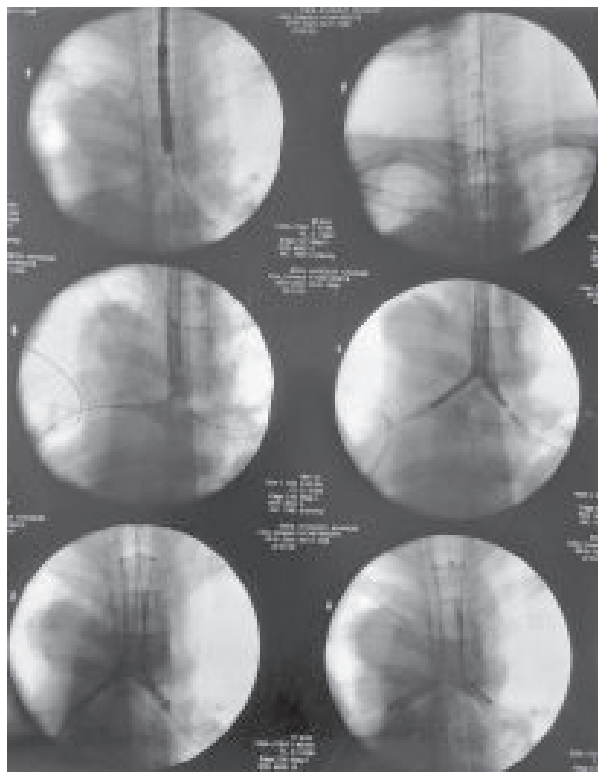


Figure 3: Y-stenting of our patient

Discussion:

Although an airway stent is only palliative when treating a malignant airway stricture, it remains a novel strategy that improves respiration and the quality of life. Moreover, it has also been applied permanently.⁶ Witt et al. originally described temporary stenting as a valuable therapeutic strategy in 1997.⁷ They reported that if subsequent tumor-specific therapy was effective after stent insertion in malignant tracheobronchial stenosis, the stent can then be removed. They also reported that if the tumor-specific therapy was ineffective, then definite stenting is the palliative method of choice for treating the severe dyspnea. Along with well-established palliative and therapeutic benefits, stent-related complications have also been reported with use of metallic and silicone stents. These include stent migrations, stent fractures, stent-associated infections, and stent obstructions by tumor, granulation tissue and secretions. Follow-up endoscopic interventions are often needed to maintain airway patency and prevent further complications.⁸

In the present case, the patient complained of severe dyspnea, so the airway first had to be secured. A further follow up plan need to be instituted looking for any

complication along with plan for underlying disease. Regular bronchoscopy follow-up should be conducted after Dumon stenting for early identification and management of related complications. Dumon stent has been used for the treating airway stenosis for about 40 years. However, the efficacy and related complications of Dumon stent has not been well elucidated by prospective clinical trials multicenter study.⁹ Previous studies reported that over 90% of patients experienced quick relief of dyspnea, rather than the complete elimination of tracheal stenosis.¹⁰ Long term mortality; prognosis varies from months to several years, the underlying malignancy or disease process limit life expectancy.

Consent:

Informed consent was obtained from the patient for the publication of this case report.

Declaration:

The authors declare no conflict of interest.

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