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Case report

New hybrid method for trachea dilatation with rigid and flexible tools

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ABSTRACT

Trachea stenosis is observed either in benign or malignant situations. In cancer malignancy a tumor might obstruct the central airway in three different ways. Again granuloma tissue is usually observed after intubation or stent placement in order to manage a benign malformation of the trachea. In any case there are several tools and techniques that can be used either with surgery or endoscopically to manage such situation. We will focus on a hybrid technique in order to ventilate the patient while performing endoscopic management of granuloma tissue.

1. Introduction

It has been observed in lung cancer or other cancer malignancies that cancer tissue might be presented in the trachea or central airways [1,2]. There are three different forms of obstruction; a) inside the airway, b) outside pressure and c) mixed [3]. Based on the findings the treating physician will choose the best approach either first by performing debulking and then placing a stent or immediately place a stent. The type of stents that we can use are both silicon and metallic (covered or not) auto expandable or polyurethane stents. If debulking is necessary then argon plasma coagulation, YAG laser or cryo probe can be used as rigid probes or flexible probes based on the method that we will use intubation with rigid bronchoscope and rigid probes or rigid bronchoscope and flexible probes through the working channel of a flexible bronchoscope. In cancer obstruction we usually use metallic covered stents, however; the choice of the stent remains for the treating physician. In the case where we have a benign situation such as; tracheomalacia then silicon stent is preferred. In order to place a silicon stent we need to use a rigid bronchoscope with all the necessary stent deployment equipment, currently we mostly use DUMON and DYNAMIC (Freitag) stents [3]. Unfortunately stents have an adverse effect of producing granuloma tissue at the two end parts of the stent in both metallic and silicon. This tissue is mainly formed due to the local stress which inhibits a cascade of local angiogenesis proteins [4]. In the situation where granuloma tissue is observed then we have to remove it. We can use several methods which have been previously described [3]. In the case where we have granuloma tissue formation due to intubation of a patient or tracheal stenosis then we have to choose based on the length the

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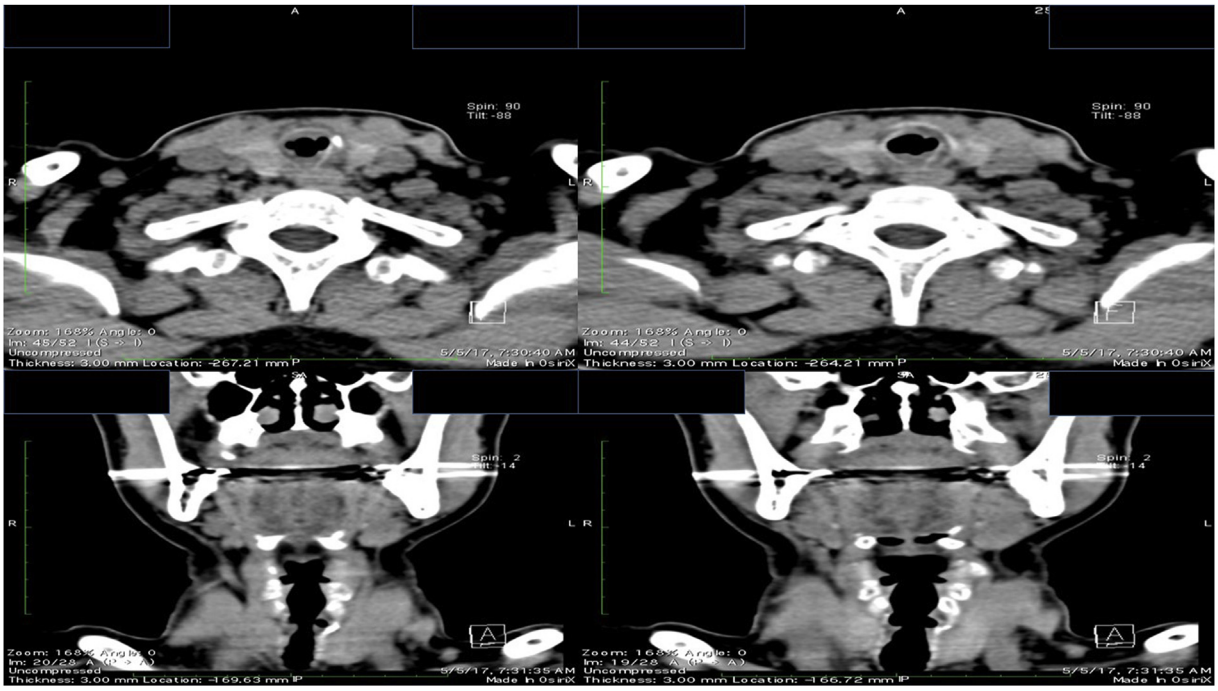

Fig. 1. Initial endoscopic figure before balloon dilation.

Fig. 2. Set up of the procedure (red arrow indicates the light source of the rigid ENT scope).

appropriate treatment approach either with surgery or endoscopic. We will currently present a hybrid method of ventilation during a trachea dilation with balloon.

2. Case presentation

A 60 year old lady was diagnosed with trachea stenosis after intubation for 15 days after a car accident (Fig. 1.). Due to the very small length of the granuloma tissue $\leq$3mm and 3 $\approx$ mm from the trachea wall inside the centrum of the airway it was decided to use a balloon dilation initially and observation every 2 months initially. The position of the stenosis and tissue formation did not allow intubation with rigid bronchoscope or endotracheal tube and therefore for airway safety and equipment application (balloon visibility) it was decided to use a hybrid method that is used from the ear, nose and throat department (ENT) (Figs. 2–6.). Direct observation of the vocal cords was able with the