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New Progress in Endoscopic Treatment of Esophageal Tracheal Fistula

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Abstract

Esophageal tracheal fistula is a pathological communication between the esophagus and the trachea and/or bronchus. It is caused by the progression of malignant tumors such as esophageal cancer and lung cancer, as well as radiotherapy and chemotherapy. Once the esophageal tracheal fistula is diagnosed, it needs immediate treatment to block the fistula as soon as possible, relieve symptoms and improve the quality of life of the person. Digestive endoscopic minimally invasive interventional techniques, represented by esophageal stents, are an important means of treating esophageal fistula. In this study, the esophageal stent type selection, placement method and efficacy in the treatment of esophageal tracheal fistula, and the application of other digestive endoscopy techniques is summarized.

Keywords: Esophageal; Digestive endoscopic; Tuberculosis; Fungal infection

Introduction

Esophagorespiratory fistula is a pathological traffic caused by various benign and malignant factors that cause ulceration between the esophagus and the trachea and/or bronchi. Patients with esophageal tracheal fistula are unable to eat normally, have severe cough, often have uncontrolled lung infections, have poor quality of life, and have a high mortality rate [1,2]. Esophageal tracheal fistula is more secondary to advanced esophageal cancer, but also in advanced lung cancer, mediastinal malignant tumor and thyroid cancer [3]. Among them, the incidence of esophageal fistula in patients with esophageal cancer is 5% to 15%, and the incidence of esophageal fistula in lung cancer patients is about 1% [4]. Malignant esophageal tracheal fistula can be caused by direct tumor invasion, or by radiation therapy, chemotherapy, laser treatment or stenting. Benign esophageal tracheal fistula is caused by postoperative surgery, trauma, esophageal foreign body, long-term compression of the tracheal tube, infectious diseases (esophageal tuberculosis, syphilis or fungal infection) and spontaneous esophageal rupture.

Esophageal tracheal fistula can seriously threaten the life of patients. Early diagnosis and treatment are very important. It can be seen through clinical symptoms, imaging, gastroscopy or bronchoscopy. The diagnosis of esophageal fistula is not difficult. It should be treated immediately after diagnosis. After the evaluation of benign esophageal tracheal fistula, the surgeon can perform surgery as much as possible. Patients with malignant esophageal tracheal fistula are generally advanced tumors, poor physical condition, and are basically unsuitable for surgical treatment. The available treatment options are very limited [3]. With the continuous development of endoscopic diagnosis and treatment technology, endoscopic stent placement is the first choice for palliative treatment of esophageal tracheal fistula, especially malignant esophageal tracheal fistula. It can improve the clinical symptoms, improve the quality of life and prolong the survival of patients with esophageal fistula. Period and other aspects have an important role. This study reviews the recent advances in endoscopic treatment of esophageal tracheal fistula.

First Digestive Endoscopic Esophageal Stent Placement

Stent selection

Endoscopic stent placement is the main cause of esophageal tracheal fistula treatment method [2-5]. For malignant esophageal tracheal fistula and partial good indications without surgical indications Patients with esophageal tracheal fistula can be placed under endoscopic stents. Generally use full coverage Membrane or partially coated self-expanding metal stent, the stent needs to be closed and surrounded The pipe wall is well bonded, the stent film is not easily damaged, the stability is good, the displacement is not easy, and Maintain a certain tension for a long time. The upper and lower edges of the esophageal stent need to be 2 cm beyond the fistula. Above, the diameter is generally selected from 1.7 to 2.0 cm. In addition, the upper edge of the stent is expected to be placed to the vicinity of the esophageal entrance, a stent with a smaller diameter and a flared upper edge should be selected. At present, there are few randomized controlled trials on the efficacy of different manufacturers and different types of esophageal stents for the treatment of esophageal tracheal fistula. There is no evidence-based medical basis, and there are many clinical cases. According to the specific conditions of patients, the type of stent and the method of placement are selected. Placement principle: stent placement should be determined according to the type and specific conditions of esophageal tracheal fistula. Esophageal stent or tracheal stent can be used alone, or esophageal stent and tracheal stent can be combined. The European Society of Digestive Endoscopy recommends the use of self-expanding metal stents for the treatment of malignant esophageal tracheal fistula, but the optimal time for stent placement is not clear and should be tailored to individual differences [2]. Esophageal stenosis can be placed separately in patients with esophageal tracheal fistula and esophageal stenosis can be placed separately. If the effect is not good, multiple esophageal stents can be considered. When the esophagus has no obvious stenosis, the displacement rate of the esophageal stent alone is higher, and the esophagus without laminating film combined with the bimetal stent

can be used for the fixation. The former plays a fixed role, and the latter acts to block the fistula; the tracheal stent can also be placed simply. In patients with esophageal tracheal fistula, there are moderate to severe stenosis in the esophagus and trachea, or when the esophagus or tracheal stent is used alone to close the fistula, the esophagus and tracheal stent can be used in combination [2-6]. At this time, the tracheal stent should be placed first, and then placed in the esophageal stent to avoid the compression of the trachea by the esophageal stent to aggravate the tracheal stenosis, which exacerbates the patient's breathing difficulties and even life-threatening. In addition, when the esophageal tracheal fistula is located in the neck esophagus, placement of the esophageal stent may cause more severe pain and foreign body sensation, affecting the swallowing function, but with the improvement of the coated metal stent process and the improvement of endoscopic techniques, the esophagus The upper esophageal tracheal fistula is not a contraindication for stenting [7]. If the upper esophageal tracheal trachea is indeed unable to place the esophageal stent after endoscopic and imaging evaluation, consider placing the tracheal stent. In addition, benign esophageal tracheal fistula can be treated with short-term esophageal stents, but specific types of stents are not recommended. The time of stent placement should be determined based on individual differences. Good choice of benign esophageal tracheal fistula Esophageal membrane self-expanding metal stent; biodegradable stent can also be used to treat benign esophageal fistula, but clinical data is limited [2]. In addition, other endoscopic methods can be used to treat benign esophageal fistula. Esophageal stents are generally not suitable for esophageal tracheal fistulas such as thoracic gastrostomy and anastomotic leakage. Because of the difficulty in sealing esophageal stents, only the tracheal stent can be inserted into the fistula, or the tracheal stent can be placed first. Place the esophageal stent as appropriate, and the esophageal stent may need to be customized according to the patient's condition or a specially designed stent.

Placement method

The esophageal stent placement method includes x-ray guidance, endoscopic direct vision, and a combination of the two methods. Most patients use the endoscopic direct-view method. Both the x-ray guidance method can be successfully completed. At present, the digestive endoscopy center with better conditions mostly adopts endoscopic direct vision combined with x-ray guidance to place the esophageal stent. It can improve the success rate of stent placement, shorten the operation time and reduce the incidence of complications. Under the direct vision of the endoscope, the esophagus and fistula can be directly observed, and intraoperative bleeding can be treated in time; combined with x-ray guidance can accurately position the guide wire and the stent, dynamically monitor the stent placement process, and the stent can be observed after the stent is placed. Mouth blocking effect In addition, according to the patient's condition, esophageal angiography, CT or endoscopy can be performed after the stent is placed, and the mouth closure, stent opening, and displacement can be evaluated [5]. Efficacy evaluation: Clinical practice has confirmed that esophageal stent placement for the treatment of esophageal tracheal fistula has the advantages of fewer traumas, less complications, and exact curative effect. However, there is no uniform judgment standard for esophageal tracheal fistula. Domestic Hongwu et al. [8] the evaluation criteria for the efficacy of esophageal fistula were developed for reference. Using esophageal stent grafts can block 75% to 100% of patients with malignant esophageal tracheal fistula, and the symptoms are improved [8-14]. However, the incidence of incomplete closure of sputum 13 within 1 week of esophageal stent placement was approximately 12% [9]. Due to the gap between the proximal edge of the stent and the esophageal wall, the stent can be repositioned or blocked by other sealing techniques [9-12]. There is not much evidence for the clinical efficacy of benign esophageal fistula in evidence-based medicine. Studies have shown that the success rate of stent placement for the treatment of benign esophageal tracheal fistula is above 95%. The rate is about 85% [13]. Early and long-term concomitant treatment of esophageal tracheal fistula with esophageal stent placement the current situation is limited. The incidence of complications of esophageal stent placement is 0-27%, and the mortality rate is 0-12% [14-16]. Esophageal stent placement the complications associated with esophageal fistula include reopening of the fistula, tumor tissue growth or food-induced stent blockage, stent displacement, stent rupture, and pain, difficulty swallowing, foreign body sensation, bleeding, and pneumonia [17-19]. A retrospective study reported that after 1 month of esophageal stent placement, 10% to 30% of patients with successful initial esophageal tracheal fistula recurrence will occur. If the closed and then opened, it indicates that the symptoms such as aspiration are reappearing, and the treatment is more difficult. Try to adjust the stent under the endoscope or re-insert the stent [9]. There is no consensus on the long-term survival of stenting for esophageal fistula. After patients with malignant esophageal tracheal fistula undergo esophageal and/or tracheal stent placement, the survival period depends on the closure of the fistula. Studies have shown that the quality of life of patients with malignant esophageal tracheal fistula in the stented group is significantly improved compared with the control group and the gastrostomy group, especially in improving dyspnea, dysphagia, eating problems, dry mouth, cough and excessive salivation. The effect is significantly older [2-20]. In a case series, the survival of the stented patients was an average of 3.4 months, significantly longer than the supportive treatment group (1.3 months) and the simple nutritional support group (1.1 months). The difference was statistically significant ($p<0.01$) [4].

Other Digestive Endoscopic Treatment Methods

Other digestive endoscopic interventional treatments for esophageal tracheal fistula include metal clips, argon ion beam coagulation, and local injection of bioprotein gel to seal the fistula [21-23], more suitable for the treatment of small sputum 13, or combined with esophageal stent placement. Currently, the use of endoscopic anastomosis clip Over-The-Scope Clip (OTSC) to close the benign esophageal tracheal fistula has been reported some according to the size of the mouth to choose the appropriate size of the OTSC, such as a small traumatic esophageal tracheal fistula can choose a sharp-toothed OTSC, but how to choose the size and type of OTSC for different types of esophageal tracheal closure There is still a lack of high quality clinical data support. Compared with traditional metal clips, OTSC has the characteristics of blocking a wider range of tissues, closing the full-thickness digestive tract and less tension to surrounding tissues, but it is more expensive and clinically unpopular. At this stage, the clinical application experience of the above various endoscopic treatment methods is still very limited compared with the treatment of esophageal stent placement.

Conclusion

In general, evidence-based medical data for esophageal tracheal fistula and its digestive endoscopic treatment are limited, mainly from case reports or case series studies, and lack of clinical guidelines.

Digestive endoscopic treatment provides a minimally invasive and safe treatment option for benign and malignant esophageal tracheal fistula, which can effectively improve the patient's quality of life and prolong the patient's survival. With the development of digestive endoscopy and multidisciplinary cooperation, the methods and effects of digestive endoscopic treatment of esophageal tracheal fistula will be increasingly perfect.

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