

## Tips and Tricks in Radiology

# Covered stenting in patients with lifting of gastric and high esophago-tracheal fistula

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**Received:** 21 November 2002 / **Accepted:** 13 December 2002

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## Introduction

The development of self-expanding coated stents opened the possibility of an immediate treatment of esophago-respiratory fistulas combined with minor side effects. This can be proven by sufficient long-term research results, amelioration of the nutritive status, and life quality [1]. Covered stenting has proved to be a therapy option in high esophago-tracheal fistula even in patients with lifting of gastric.

## Discussion

Esophageal respiratory tract fistulas presenting in adult life are rare and cause severe debilitation and suppurating lung disease. According to published data, the incidence rate of malignant esophageal fistulas by locally advanced esophageal carcinoma is approximately 13% [2]. The grafting of self-expandable coated stents for sealing of malignant esophago-respiratory fistulas is the state-of-the-art method as it is the only technique to ensure a sufficient elimination of the fistula to a very high degree, which vitally endangers

the patients especially concerning the pulmonary complications. The introduction of this treatment could significantly increase life expectancy of respective patients [3]. These stents can be fitted simply in a single session and with few complications, and the fistula symptoms are observed to subside immediately. Surgical treatment can be considered as an alternative to stent implantation.

The low complication rate of stent implantations is remarkable as respective casualties are rarely reported. In few cases a migration of the stents could be experienced while synthetic covered stents showed by far poorer results than respective uncovered stents. A perforation was reported for up to 10% of examined cases, a relevant bleeding for up to 4% [1].

The technical success rate of implantation of self-expandable coated stents for exclusion of malignant esophago-respiratory fistulas is close to 100%. The functional success rate is between 95 and 100% in the face of complete elimination of a significant improvement of current dysphagia [4, 5, 6, 7].

## Appearance

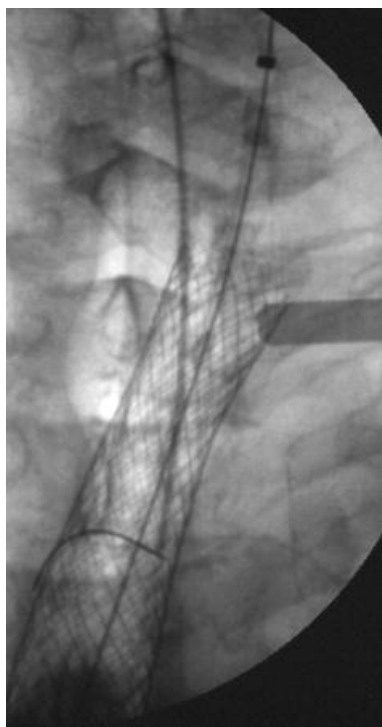
We present a 68-year-old man with a squamous epithelium carcinoma of the esophagus. The computer tomographic diagnostic (January 2000; Fig. 1) displayed a neoplasia in the middle to distal esophagus section with solids above. The cranio-caudal extension of the neoplasia amounts to close to 35 mm. Surgical excision of the tumor with following lifting of gastric was performed (April 2000).



**Fig. 1.** Computer tomographic diagnostic displays a neoplasia in the middle to distal esophagus (*arrows*)

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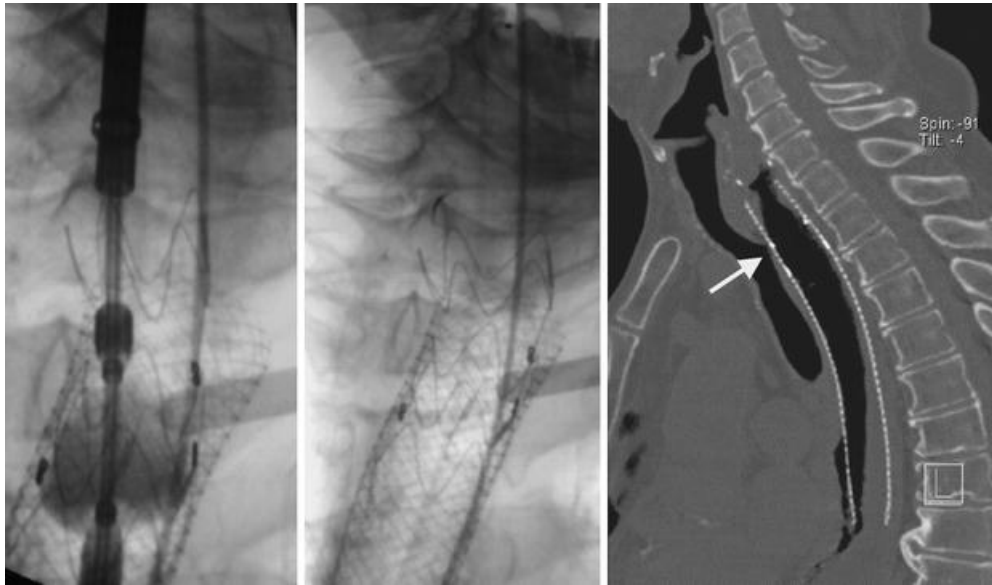
In the course of a regular follow-up control (thoracic CT, May 2002) a patulous swelling of the mucous membrane in the proximal esophagus could be displayed, which also expanded into the middle section of the esophagus with additional massive dilatation of distal sections. Four months later, the patient showed a pronounced symptomatic coughing and dysphagia. The subsequent fluoroscopy of the esophagus (50 ml Gastrografin) displayed a fistula 12 cm below the esophagus entry with an early contrast of trachea (Fig. 2).



**Fig. 2.** Fluoroscopy of the esophagus displays a fistula 12 cm below the esophagus entry with an early contrast of trachea (*arrows*)

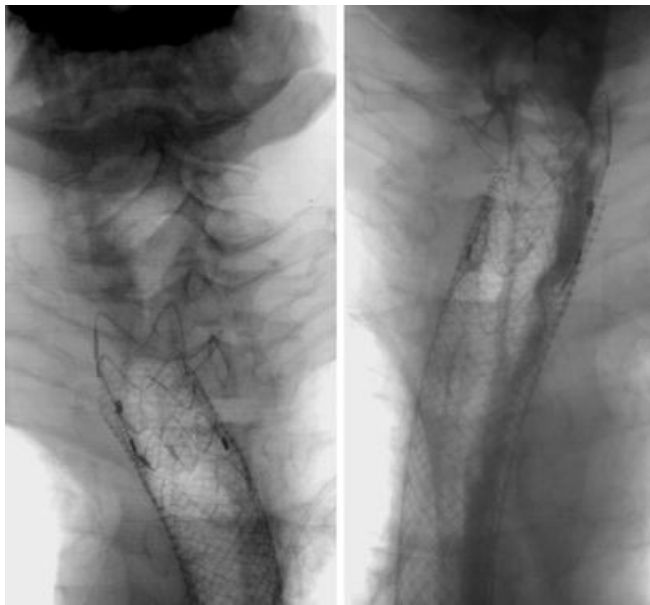
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A Flamingo stent was implanted under endoscopic guidance for palliation of the esophago-tracheal fistula, 14 cm in length (October 2002; Fig. 3). Five days later, an additional covered stent was implanted, 6 cm in length (Fig. 4). The radiologic check-up eventually showed a complete sealing of the fistula (Figs. 5, 6, 7). The aim of the stent insertion was to seal the fistula in order to prevent aspiration of esophageal content and subsequent pneumonitis. The patient recovered fully under additional antibiotic therapy.



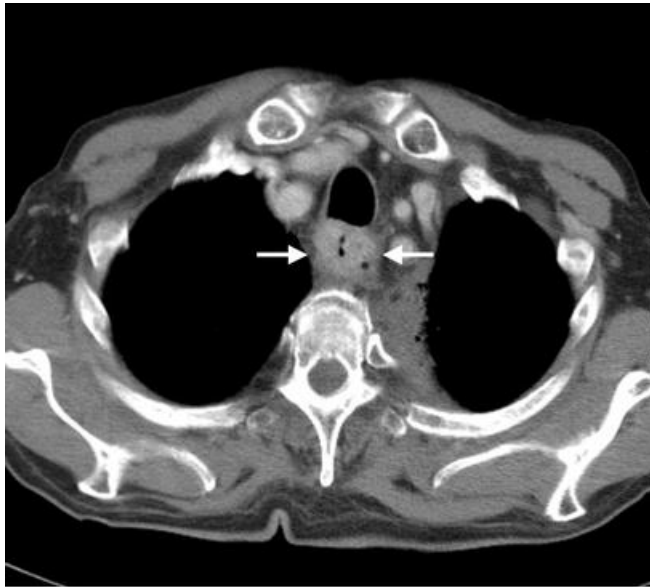
**Fig. 3.** Implantation of a Flamingo stent under endoscopic guidance for palliation of the esophago-tracheal fistula

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**Fig. 4.** An additional covered stent was implanted 5 days later (*arrow*) and shows sealing of the fistula

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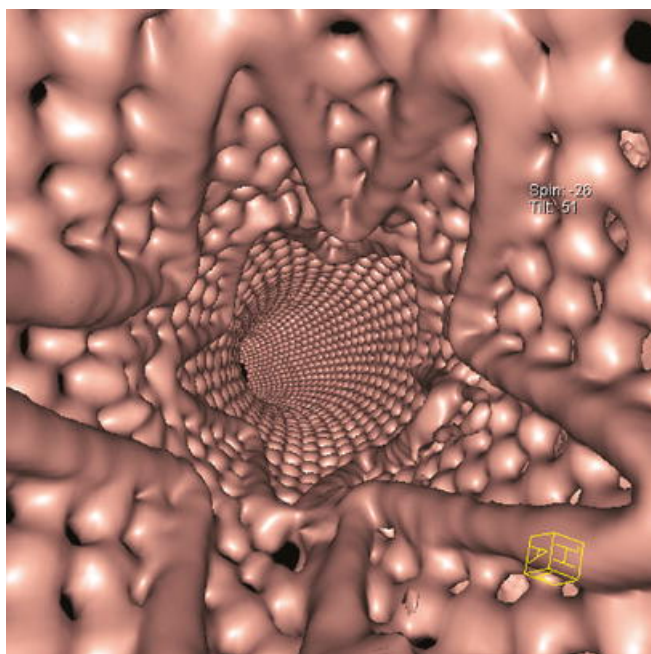
**Fig. 5.** Radiologic check-up shows a complete sealing of the fistula

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**Fig. 6.** Maximum intensity projection reformation, 16-row spiral CT (Sensation 16, Siemens, Forchheim/Germany): collimation  $16 \times 0.75$  mm, SD 1 mm, increment 0.5 mm, 120 kV, 160 mAs)

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**Fig. 7.** Virtual endoscopy of the stent, shaded-surface display reformation (Sensation 16, Siemens, Forchheim/Germany): collimation  $16 \times 0.75$  mm, SD 1 mm, increment 0.5 mm, 120 kV, 160 mAs)

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In summary, covered stenting is a therapy option in high esophago-tracheal fistula even in patients with lifting of gastric.

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