

## ESOPHAGEAL STENT MIGRATION: A REPORT OF TWO CASES

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### Abstract

Self-Expandable Metallic Stents (SEMSs) are widely used to treat esophageal strictures, both benign and malignant in origin. Esophageal stenting, performed by using different types of SEMS (fully covered, partially covered or uncovered), has a high technical success rate, but carries the risk of several complications occurrence, including migration that is considered one of the major.

We report two cases of fully coated (FC) SEMS displacement and discuss migration predisposing factors, aiming to highlight the differences in safety of partially coated (PC) versus FC-SEMSs in malignant stenosis.

**Keywords:** *Computed Tomography, Fully covered self-expandable metal stents, Partially covered self-expandable metal stents, Self-expandable metal stents*

## Introduction

SEMSs are commonly used to manage esophageal strictures, fistulas and leaks caused by either malignancy or benign disorders [1-2], as well as in gastro-intestinal obstruction [3]. In malignant dysphagia due to esophageal or mediastinal cancers, they can be used as a bridge to surgery or as a palliative treatment in terminally ill patients [1, 4-7]. Esophageal stenting, which can be performed under endoscopy, fluoroscopy or both endoscopy and fluoroscopy guidance, is minimally invasive and reaches high technical success rates, as reported in literature [4, 8-10], with improvement of dysphagia [11]. Nevertheless, it is associated with several complications: reflux, gastric discomfort and pain are considered minor ones, whereas obstruction and migration account for major complications, requiring re-intervention or potentially leading to death.

Three types of SEMS designs are currently available: uncovered, PC-SEMS and FC-SEMS [8, 12]. The uncovered SEMSs do not find an extensive use in clinical practice, most likely due the severe consequences of an excessive tissue embedment within the stent that can be observed in oncologic patients [8]. PC-SEMSs, on the other hand, are broadly used in malignant strictures to relieve dysphagia, but their use is limited by the low chance of being successful should their removal be needed [8]. In this context, FC-SEMSs have found a wide application to manage benign and oncological strictures, in order to prevent tissue ingrowth and to facilitate stent removal procedures [9, 10]. FC-SEMSs, though, are associated with high migration rates [8, 13-15]. Proximal migration can be fatal, but it is observed less frequently [15]. Cardial involvement and chemotherapy administration after stenting are the two main predisposing factors to migration [8-15].

We report two examples of patients who required re-stenting following FC-SEMS migration.

## Case presentation

Case 1. A 76 years old man with worsening dysphagia and weight loss was admitted to our University Hospital in Sassari, Italy. Following a gastrointestinal endoscopy, which showed a bulging

mass in the lower esophagus, he was diagnosed with adenocarcinoma. An upper gastrointestinal X-ray study, performed using Philips Omnidagnost Elevation X-ray and contrast agent (Gastrografin®, Bayer), demonstrated an esophageal stenosis of about 70%. Given the severity of the stricture, a FC-SEMS was placed under fluoroscopy guidance. Following the procedure, he experienced an immediate benefit. He, then, underwent a total body CT scan that identified multiple metastatic lesions in the right kidney and in the lumbar spine, which were treated with a single cycle of radiotherapy. Chemotherapy was not administered. Six months later he complained of neck pain, difficulty in swallowing and vomiting. An X-ray first and a following CT scan showed that the stent had migrated in the proximal third of the esophagus. The stent was endoscopically removed and a new stent, partially covered, was deployed under fluoroscopic guidance at the site of stenosis, with rapid symptom relief. A control X-ray, performed a year later, demonstrated that the stent placement was still correct.

Case 2. A 68 years old man complaining of significant weight loss and three weeks history of worsening vomiting was admitted to our University Hospital. An upper gastrointestinal X-ray study, performed using Philips Omnidagnost Elevation X-ray and contrast agent (Gastrografin®, Bayer), showed a stenosis greater than 80% in the distal esophagus with cardial involvement. Following a gastrointestinal endoscopy, he was diagnosed with adenocarcinoma. Thus, a FC-SEMS was released under combined endoscopic and fluoroscopic guidance. The procedure was successfully performed, but after only a week the stent migrated distally in to the stomach. Following that, a second stent, a PC-SEMS, was deployed under combined endoscopic and fluoroscopic guidance with immediate symptom resolution. A total body CT scan showed multiple metastases in the liver so chemotherapy was started. After six months, a control X-ray showed a still correct stent position.

## Discussion

Stent migration is not frequently observed, but is one of the most common among esophageal stenting delayed complications, especially in

malignant strictures, along with pain and obstruction [4]. FC-SEMSs are prone to migration. Predisposing factors include cardiac stenosis and administration of chemotherapy after the device deployment. In case of gastro-esophageal junction location, in fact, the distal portion of the stent is not anchored, protruding into the stomach lumen [4]. Chemotherapy, when effective, shrinks the tumor, allowing the stent to displace. Distal migration is more frequent than proximal displacement, due to peristaltic waves and gravity [9]. Proximal migration represents a serious complication, especially in FC-SEMS use [8]. In fact, when a proximal migration occurs, the patient usually experiences severe vomiting that, through involuntary contractions, tends to cause further proximal movements, worsening the situation. In the worst scenario, the stent moves up to the front of the larynx, with dangerous consequences, that can be fatal in case of a FC-SEMS migration [8, 11, 15-19]. Given the stent design, proximal migration of a PC-SEMS leads to less serious consequences in any case. Endoscopic stent fixation can potentially prevent this serious complication, but the high costs limit its routine use [8].

As the illustrated cases have demonstrated, PC-SEMSs are less prone to displacement, even in presence of the aforementioned risk factors [8]. In the first case that we reported patient presented with a lesion involving the middle and the distal esophageal thirds, excluding the cardia and he had not been treated with chemotherapy. Nevertheless, the FC-SEMS that he had deployed migrated proximally. The second patient, on the other hand, suffered from a stenosis involving the distal esophageal third and cardia and had received chemotherapy following the procedure, but the PC-SEMS that he had placed did not migrate.

These two cases offer the possibility of making a safety direct comparison between FC- and PC-SEMS in the same patient treated with both devices, leading to the consideration that the PC-SEMSs should be preferred in malignant strictures.

### Conclusion

In our opinion, based on our experience and in accordance to literature, PC-SEMSs are safer to use in malignancy, offering a better anchor to the

esophageal wall, which makes them less susceptible to migration.

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