
Palliation of Neoplastic Esophageal Strictures with Metallic Stents

Neda Nozari

Department of Gastroenterology, Yas Hospital, Tehran University of Medical Sciences, Tehran, Iran

Email address:

nozari_neda@yahoo.com

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Abstract: Most patients with advanced esophageal neoplasm have dysphagia and suffer from cachexia and malnourishment. Supportive treatments focus on symptom palliation and improving quality of life at this time. Guidelines illustrated some indications for stent use in esophageal neoplasm such as inoperable neoplastic obstruction, presence of neoplastic fistula or perforation, tumor recurrence and contraindication for chemo-radiotherapy. Palliative stents help relieve dysphagia, manage mouth secretions, reduce aspiration risk, and maintain oral intake. Stent placement sometimes requires both endoscopic and fluoroscopic guidance. A stricture dilation is not necessary before stent placement. Success rate of SEMS placement was reported 80-100%. Complications of stents are bleeding, perforation, migration, and tumor ingrowth. Coated SEMS are the treatment of choice in the presence of neoplastic trachea-esophageal fistula. Partially covered stents are used for neoplastic stricture but their removal is sometimes difficult. The stent can be left in esophagus indefinitely for palliation in cases with progressive disease. In this article, we reviewed the recent literatures for efficacy of palliative metal stents placement in patients with esophageal neoplasm.

Keywords: Dysphagia, Esophageal Cancer, Esophageal Stent, Self Expandable Metal Stent

1. Introduction

The prevalence of gastrointestinal neoplasms including esophageal neoplasm continues to increase in the world [1, 2]. The most of patients with esophageal neoplasm are diagnose at an advanced and incurable stage. Patients need to palliative treatment at this time of diagnosis [1-4]. 5 year Survival of esophageal neoplasm is 5-15% [2, 4-6]. Palliative treatments like stents can be offered as the first choice at this stage [1-2, 6-12]. Because most of patients suffer from dysphagia due to bulk of tumor lesion and unfortunately are un-resectable at the diagnosis time [1-2]. Endoscopic placement of stents has been shown to rapid dysphagia relief [1, 3, 13-14]. Maintenance of oral intake, nutritional support, manage mouth secretions, and reduce aspiration risk are essential for these patients [12-13]. Guidelines illustrated some indications for stent use in esophageal neoplasm including inoperable neoplastic obstruction, presence of neoplastic fistula or leakage or perforation, tumor recurrence and contraindication for chemo-radiotherapy [10, 15-16]. Contraindication of stents placement are curable neoplasm,

uncorrectable coagulopathy, presence neoplasm within 2 cm of upper esophageal sphincter, within 6 weeks of chemo-radiotherapy, ill patients, gastrointestinal obstruction, airway compression risk and sepsis [15-16]. The aim of this review article was to highlight safety and efficacy of palliative metal stents placement in patients with advanced esophageal neoplasm.

2. Stent Selection

Endoscopic endoprosthesis has been introduced as an easy, rapid and less complication technique for palliation of neoplastic dysphagia compared with palliative surgery [17]. A good esophageal endoprosthesis has easy to use delivery system and ability to reposition. Different types of stents are available including plastic stent and metal stent. A major complication of plastic stent was immigration and weren't very useful and effective for patients with esophageal neoplasm [17-18]. Self-expanding metallic stents [SEMS] had fewer complications compared to plastic stents [10, 17]. SEMS are partially covered or fully covered. Table 1 has

showed the characteristics of each SEMS briefly [15, 17].

Table 1. Characteristics of Self-expanding Metallic Stents [15, 17].

Material	Ultraflex	Wallstnet I	Wallstent II	Z-stent	Choo stent
	Nitinol	Elgiloy	Elgiloy	Stainless steel	Stainless steel
Delivery system diameter (F)	24	38	18	28	25
Covering	Yes	Yes	Yes	Yes	Yes
Design	Mesh	Mesh	Mesh	Zigzag	Zigzag
Radial force	+	++++	+++	++	++
Luminal diameter (mm)	16, 18	18	19	18	18, 21
Closure of fistula	Yes	Yes	Yes	Yes	Yes
Degree of shortening (%)	30–40	20	30	0–10	0

Ultraflex stent (Boston Scientific), Wallstent (Boston Scientific, Natick, MA), Gianturco-Rosch-Z stent (Cook Europe), Choo stent (Solco Intermed, Seoul, South Korea).

3. Technique of Insertion

Location of tumor was seen in mid part of esophagus in more than half of patients [8, 19-20]. SEMS is preferred for mid esophageal neoplasm but also can be used in each part of esophagus just considered at least 2cm away from upper esophageal sphincter [10, 15]. SEMS should be placed at least after 6 weeks of the completion of chemo-radiotherapy for the prevention of the chest pain complication [15-16, 21]. Some studies advised one barium esophagogram to define clearly narrowing of neoplastic lesion and presence of tracheo-esophageal fistula if there was any clinical suspicious by upper endoscopy [10, 17]. Stent selection should be basis on tumor location, operator experience and expected survival [10, 15, 17]. Stent placement sometimes

requires both endoscopic and fluoroscopic guidance [22]. The SEMS should be placed 2cm above and below the neoplastic lesion and dilatation is not necessary. Neoplastic lesion in proximal part of esophagus is difficult for using SEMS procedure and success rate is lower than distal part [10, 15, 17]. Some studies recommended 7mm length and 18mm diameter of SEMS in cervical esophagus according to reduced complications such as foreign body sensation [17]. The use of partially or fully covered metal stents in subjects with neoplasm fistula or perforation were useful and with good results [2, 17, 23-24]. Modified covered SEMS prevents from stent migration [23]. Success rate of SEMS placement was reported 80-100% [1, 19, 25-26]. Table 2 summarized results of some studies for using SEMS in advanced esophageal neoplasm.

Table 2. Results of Some Studies According to Using SEMS in Advanced Esophageal Neoplasm.

	Singh, et al 20	Khamaysi, et al 1	Gray, et al 27	Shim, et al 23	Park, et al 25	Johnson, et al 28
Patients number	100	42	53	61	32	92
Proximal tumor	5%	4.8%	NR	3.3%	12.5%	71.8%
Distal tumor	37%	78.5%	NR	37.7%	65.6%	28.2%
Re-stenting	6%	30.9%	22.6%	NR	21.9%	14%
Median survival	<22 weeks	17 weeks	> 4 weeks	NR	<14 weeks	16 weeks
NR. Not reported						

4. Post Procedure Complications

Immediate complications of SEMs such as perforation or bleeding of esophagus are rare [11, 19, 29]. Early and late complications following the SEMS placement summarized in table 3 and reported between 11.5-43.4% in some studies [1, 23, 27].

Table 3. Results of Some Studies About Complications of SEMS.

	Zaidi, et al 2	Shim, et al 23	Christie, at al 30	Uitdehaag, et al 3	Tian, et al 8	Uesato, et al 21
Chest pain	10%	5%	NR	16%	17.6%	30%
GERD	20%	5%	NR	13%	NR	17.2%
Tumor ingrowth	20%	0%	33%	NR	NR	NR
Stent migration	10%	0%	8.7%	13.7%	5.5%	2%

GERD. Gastroesophageal reflux, NR. Not reported.

Tumor ingrowth can be decreased by using of covered SEMS, but with an increased rate of stent migration [10, 15]. The migration risk increase when the stent is placed across the gastroesophageal junction [22]. Partially covered SEMS help to prevent migration but their removal is sometimes difficult according to high rate of tumor in growth [18, 31].

5. Survival After Insertion of SEMS

Median survival rate of unresectable esophageal neoplasm is 3-6 months [14, 26]. Mean survival times after SEMS was 90-150 days in some studies. Patients sometimes survived

more than one year also [14, 20, 26, 28, 32]. The stent can be left in esophagus indefinitely for palliation in cases with progressive disease [4]. The median survival of patients with SEMS and re-stenting sometimes was significantly longer (222 ± 26 days) than patients with SEMS and without re-intervention [29]. Survival is not related to the location of neoplasm in the esophagus or its histologic type after SEMS insertion [26].

6. Conclusion

More than 50% of esophageal neoplasm in advanced stage needs to palliative treatments for dysphagia. Endoscopically placed esophageal stents help fast relieve of their dysphagia and offer a good quality of life. SEMS are safe and effective with relatively few complications. Late complications such as stent migration or tumor in growth are treated by re-intervention of endoscopy in most of time. Coated SEMS are the treatment of choice in patients with neoplastic dysphagia in the presence of trachea-esophageal fistula. Although partially covered stents are designed for esophageal neoplasm but their removal is sometimes difficult. The stent can be left in esophagus indefinitely for palliation in cases with progressive disease.

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