

Floroskopi Kullanılmadan Yapılan Özofajial Stent Uygulamalarının Güvenilirliği

Safety of Esophageal Stent Placement Without Fluoroscopy

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ÖZ

GİRİŞ ve AMAÇ: Özofajial stent uygulamaları disfajinin yönetiminde cerrahiye alternatif ve kolay uygulanabilir işlemlerdir. Stent işlemleri floroskopi altında güvenle uygulanabilmektedir. Ancak floroskopi işlemi uygun işlem odası, ekipman ve deneyimli ekip gerektirmekte ve radyasyon riski gibi dezavantajlar içermektedir. Bu çalışmada floroskopi işlemi olmadan yapılan üst gastrointestinal sistem stent uygulamalarının sonuçlarını irdeleyerek bu işlemin güvenilirliğini ve uygulanabilirliğini araştırmak amaçlandı.

YÖNTEM ve GEREÇLER: Nisan 2014- Temmuz 2017 tarihleri arasında üst gastrointestinal sisteme stent işlemi uygulanan olgular hastane kayıtları ve endoskopi raporları araştırılarak retrospektif olarak analiz edildi.

BULGULAR: Üst gastrointestinal sisteme stent endikasyonu koyulan 36 olgu retrospektif olarak değerlendirildi. Yirmi üç olgu erkek (% 63.9), 13 olgu ise bayandı (% 36.1). Olguların ortalama yaşı 62.54 idi (36-89). Stent işlemi %36.11 oranıyla en fazla Siewert Tip II kardiyaya tümörlü olgulara uygulandı. Mide kardiyaya tümörü nedeniyle yarı kaplı metalik stent uygulanan bir olguda işlemin 6. ayında migrasyona bağlı ileum obstrüksiyonu gelişti. Laparotomi ile stent çıkarıldı. Ameliyat sonrası sütür hattından kaçak nedeniyle reopere edilen ve ileostomi uygulanan hasta kaçağa bağlı sepsis nedeniyle kaybedildi.

TARTIŞMA ve SONUÇ: Stentlerin floroskopi altında uygulanması teknik olarak kolay ve güvenilir olmakla birlikte deneyimli bir ekip, uygun ekipmanlar, donanımlı bir endoskopi ünitesi gerektirmekte ve günümüz şartlarında her endoskopi ünitesinde mevcut ihtiyaçlar karşılanamamaktadır. Bu nedenler birçok hasta başka merkezlere yönlendirilmekte, zaman kaybına ve hastaların yaşam kalitesinde düşmeye neden olmaktadır. Bu çalışmada üst gastrointestinal sistem darlıklarının yönetiminde stenilerin floroskopi olmadan da etkin güvenilir ve düşük komplikasyon oranlarıyla uygulanabilirliği gösterilmiştir.

Anahtar Kelimeler: endoskopi, floroskopi, komplikasyon, özofagus, stent

ABSTRACT

INTRODUCTION: Esophageal stents are placed endoscopically with or without aid of fluoroscopy to patients with esophagus or gastric carcinoma presenting with dysphagia symptoms. In this study, we aimed to investigate the safety and feasibility of upper gastrointestinal stenting without fluoroscopy.

METHODS: Upper gastrointestinal stent placement procedure without aid of fluoroscopy between April 2014 and July 2017 were analyzed retrospectively. Patients demographic profiles, stent indications and complications were examined.

RESULTS: Thirty-six cases were analyzed. Twenty-three patients were male (63.9%) and 13 patients were female (36.1%). The average age was 62.54 (36-89). The most indication of stent placement was cardia cancers Siewert type II (36.11 %). A patient with cardia tumor had ileum obstruction due to migration of stent 6 months after procedure. This patient died due to sepsis caused by anastomosis leakage after surgery.

DISCUSSION and CONCLUSION: Esophageal stent placements without aid of fluoroscopy are safely used in patients with dysphagia as a palliative treatment of anastomosis stenosis, leakage and fistulas. Easy appliance and low complication rates are advantages of the procedure but it should not be forgotten that its complications can be mortal.

Keywords: complication, endoscopy, esophagus, fluoroscopy, stenting

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Başvuru Tarihi: 24.09.2017

Kabul Tarihi: 28.03.2018

INTRODUCTION

Upper gastrointestinal stenosis are characterized by nausea, vomiting, regurgitation and pain. They occur due to esophageal motility disorders (such as esophageal web and achalasia) and esophageal cancers. Endoscopic stent procedures are effective and reliable methods as an alternative to surgery before neoadjuvant therapy in patients with advanced esophageal and gastric cancer or to maintain sufficient oral intake in patients with unresectable mass. The fact that it is relatively easy to perform and has low morbidity and mortality rates than surgery has increased the popularity of stent procedures (1,2).

The stent can be metallic or plastic, coated or uncoated and in various sizes. The morbidities of stents may vary according to their properties. Migration rate is higher in non-metallic stents but lower in metallic stents. However, complications such as perforation and tumor invasion into the stent are more common in metallic stents (3,4). Metallic stents are usually preferred in patients in whom long-term stenting is planned. Coated stents include polytetrafluoroethylene, silicone, or polyurethane barriers which prevent tumor invasion into the stent and interrupt the connection between the mucosa and the stent. Thus, tumor invasion into the stent and passage obstruction are prevented (5).

Stents can be safely used under general anesthesia or under sedation. For the control of stent localization, stenting can be performed under fluoroscopy. Thus, the appropriateness of stent placement is checked and the procedure is terminated. However, this procedure has handicaps such as fluoroscopy device, experienced staff, equipped endoscopy room, and radiation exposure. In this study, it was aimed to examine the results of upper gastrointestinal stent placement without fluoroscopy and to investigate the safety and feasibility of this procedure.

METHODS

Patients who underwent upper gastrointestinal stent placement between April 2014 and July 2017 were retrospectively analyzed by examining their hospital records and endoscopy reports. Demographic characteristics of patients, indications

for stent placement, tumor localization in patients undergoing stent placement due to malignancy, type of stents, and complications occurring during follow-up after the procedure were recorded.

Stent procedure was performed under sedation in the endoscopy unit. The dimensions of stenosis were determined with the aid of an endoscope. Balloon dilatation was performed prior to stenting in patients with nearly complete obstruction. The measurement was made by passing through stenosis after dilatation. The size of stent was determined according to the length of stenosis. Stent properties were selected by the endoscopist. Because the majority of procedures were performed due to malignancy, self-expanding metallic stents were predominantly preferred. Fluoroscopy imaging was not performed during the procedure. After the procedure, the chest X-ray was taken to check stent localization. In the light of issues occurring during and after the procedure, the efficacy and safety of stent placement without fluoroscopy were investigated. This retrospective study was approved by the Ethics Committee of Haseki Education and Research Hospital.

RESULTS

Thirty-six patients who had indications for upper gastrointestinal stent placement were evaluated retrospectively. Twenty-three (63.9%) patients were male and 13 (36.1%) patients were female. The mean age of the patients was 62.54 (36-89) years. Stent procedure was performed in most (36.11%) of patients with Siewert Type II gastric cardia tumor (Table 1).

Only 2 (5.55%) of the 36 procedures resulted in failure because the guidewire could not pass the stenosis due to complete obstruction. Semi-coated, self-expandable metallic stents were used in the procedures. The endoscopist decided on the size of stent according to the length of stenosis during the procedure. After the procedure, no technical problems were observed in control graphs in any patients. Stents were found to be localized appropriately. The patients started receiving oral fluids 6 hours after the procedure. If tolerated, the patients started eating semi-solid foods. The patients without complications were discharged on the first day after the procedure.

Table 1. Indications

	Patients	%
Esophagus carcinoma (mid)	9	25
Esophagus carcinoma (distal)	7	19.44
Cardia tumor (Siewert type II)	13	36.11
Lungcancer tracheoesophageal fistula	3	8.33
Esophagojejunostomy stenosis	1	2.77
Leakage after sleeve gastrectomy	1	2.77
Failed procedure	2	5.55
Total	36	100

Early complications such as bleeding and perforation were not observed in any patients. Three patients were followed up due to severe chest pain. These patients underwent long-term analgesic therapy. Two patients reported increased reflux symptoms after the procedure. Reflux training was given to these patients, and proton pump inhibitor therapy was started. After treatment, their symptoms were regressed. Ileal obstruction occurred due to migration at the 6th postoperative month in one patient who underwent semi-coated self-expandable metallic stent due to gastric cardia tumor. The stent was removed with laparotomy. This patient was reoperated due to suture line leakage after surgery and underwent ileostomy but died due to sepsis caused by leakage.

The stent was removed 8 week after the procedure in one patient who underwent stent placement due to leakage after sleeve gastrectomy. It was observed that the leakage closed spontaneously during follow-ups. This patient was discharged without any problems.

DISCUSSION

Upper gastrointestinal tract stenosis caused by malignancy leads to dysphagia which severely impairs the quality of life of patients. Endoscopic stent procedures are rapid and effective methods in the management of dysphagia in inoperable patients. The use of self-expandable metallic stents in malignant dysphagia is increasing. In a study of Song et al. involving 119 patients, coated metallic stents were reported to be more effective in malignant dysphagia compared to benign stenosis.

Complications such as tumor invasion into the stent and passage obstruction are less common in coated stents compared to uncoated stents. However, migration rate is higher in coated stents. In light of these information, semi-coated metallic stents were preferred for malignant upper gastrointestinal tract stenoses in this study (5-7).

Fluoroscopic-guided stent placement is a technique that is easy to perform and has high success rates (8). However, the use of fluoroscopy carries a higher risk of radiation exposure for the patient, surgeon, and surgical team. Radiation may cause cellular damage by inducing DNA lesions. These effects often result in cell death or genetic instability, leading to an increased risk of malignancy (9). There are publications in the literature reporting that the procedure has been performed without fluoroscopy (10). In a study conducted by Ferreira et al. in 2012, while 66 patients underwent stent placement under fluoroscopy, 60 patients underwent stent placement without fluoroscopy. There was no statistically significant difference between two groups in terms of complication rate (11). Because of the negative consequences of fluoroscopy and the difficulties in its feasibility, we perform stent procedures without fluoroscopy in our endoscopy unit. In this study, stent procedures were successfully completed without any complications and without fluoroscopy in all patients.

In upper gastrointestinal tract stenoses, stent procedures are minimally invasive procedures that are easy to perform and lead to rapid improvement in dysphagia symptoms. However, they can lead to complications with high morbidity and mortality rates such as bleeding, perforation, retrosternal pain, aspiration pneumonitis, arrhythmia, stent migration, stent occlusion, and tracheoesophageal fistula (6). Complication rates in stent placement without fluoroscopy are around 5% (4). While retrosternal pain and migration are more common in the short period, complications such as stent occlusion and migration are more common in the long period (12,13). In a study of Saligram et al. involving 280 patients, they reported that the rate of chest pain after stent procedure was 3.6% (4). In our study, 3 (8.3%) patients developed retrosternal pain as an acute complication.

Thomas et al. reported that the mortality rate due to stent procedures was 0.5-2% (14). In our study, one patient developed ileal obstruction due to migration and died after surgery. The mortality rate was 2.77%.

There are publications showing that esophageal stents have been successfully used in upper gastrointestinal system leaks (8,15-17). In our study, one patient underwent a semi-coated, self-expanding metallic stent due to leakage after sleeve gastrectomy. The stent was removed eight weeks later. It was observed that the leakage closed spontaneously during follow-ups.

As a result, stents play an important role in the management of dysphagia in inoperable esophagus and cardiac tumors. Although stent placement under fluoroscopic guidance is technically easy and reliable, it requires experienced team, suitable equipments, and equipped endoscopy unit. The current needs of each endoscopy unit cannot be met in today's conditions. These problems cause many patients to be referred to other centers, leading to loss of time and a decrease in the quality of life of patients. This study has demonstrated that stenting can effectively and safely be applied with low complication rates without fluoroscopy in the management of upper gastrointestinal tract stenoses. Although this study includes handicaps such as retrospective design and a small number of patients, it is a guideline in terms of keeping light on large randomized controlled trials.

REFERENCES

1. Tringali A, Didden P, Repici A, Spaander M, Bourke MJ, Williams SJ, Spicak J, Drastich P, Mutignani M, Perri V, Roy A, Johnston K, Costamagna G. Endoscopic treatment of malignant gastric and duodenal strictures: a prospective, multicenter study. *Gastrointest Endosc.* 2014; 79: 66-75.
2. Nagaraja V, Eslick GD, Cox MR. Endoscopic stenting versus operative gastrojejunostomy for malignant gastric outlet obstruction-a systematic review and metaanalysis of randomized and non-randomized trials. *J Gastrointest Oncol.* 2014; 5: 92-98.
3. Vakil N, Morris AI, Marcon N et al. A prospective, randomized, controlled, trial of

covered expandable metal stents in the palliation of malignant esophageal obstruction at the gastroesophageal junction. *Am J Gastroenterol* 2001; 96: 1791-6.

4. Saligram S, Lim D, Pena L, Friedman M, Harris C, Klapman J. Safety and feasibility of esophageal self-expandable metal stent placement without the aid of fluoroscopy. *Diseases of the Esophagus.* 2017; 30: 1-6.

5. Yim HB, Jacobson BC, Saltzman JR, Johannes RS, Bounds BC, Lee JH, et al. Clinical outcome of the use of enteral stents for palliation of patients with malignant upper GI obstruction. *Gastrointest Endosc.* 2001; 53: 329-332.

6. Neyaz Z, Srivastava DN, Thulkar S, Bandhu S, Gamanagatti S, Julka PK, Chattopadhyaya TK. Radiological Evaluation of Covered Self-Expandable Metallic Stents Used for Palliation in Patients with Malignant Esophageal Strictures. *Acta Radiol.* 2007; 2: 156-64.

7. Song HY, Do YS, Han YM, Sung KB, Choi EK, Sohn KH, et al. Covered, expandable esophageal metallic stent tubes: experiences in 119 patients. *Radiology.* 1994; 193: 689-95.

8. Ong GKB, Freeman RK. Endoscopic management of esophageal leaks. *J Thorac Dis.* 2017; 9: 135-145.

9. Narain AS, Hijji FY, Yom KH, Kudaravalli KT, Haws BE, Singh K. Radiation exposure and reduction in operating room: Perspectives and future directions in spine surgery. *World J Orthop.* 2017; 8(7):524-530.

10. Sharma P, Kozarek R. Role of esophageal stents in benign and malignant disease. *Am J Gastroenterol.* 2010; 105: 258-73.

11. Ferreira F, Bastos P, Ribeiro A, Marques M, Azevedo F, Pereira P, Lopes S et al. A comparative study between fluoroscopic and endoscopic guidance in palliative esophageal stent placement. *Dis Esophagus.* 2012; 25: 608-13.

12. Watkinson AF, Ellul J, Entwisle K, Mason RC, Adam A. Esophageal carcinoma: Initial results of palliative treatment with covered self-expanding endoprostheses. *Radiology.* 1995; 195: 821-7.

13. Bor R, Fabian A, Balint A, Farkas K, Szücs M, Milassin A, et al. Endoscopic management of complications of self-expandable metal stents for treatment of malignant esophageal stenosis and tracheoesophageal fistulas. *Therap Adv Gastroenterol.* 2017; 10(8): 599-607.

14. Thomas AL, Steward WP, Recent advances in the nonsurgical treatment of upper gastrointestinal tract tumors. *Expert Rev Anticancer Ther.* 2001; 1: 258-68.

15. Kauer WK, Stein HJ, Dittler HJ, Stewart JR. Stent implantation as a treatment option in patients with thoracic anastomosis leaks after esophagectomy. *Surg Endosc.* 2008; 22: 50-53.

16. Blackmon SH, Santora R, Schwarz P, Barroso A, Dunkin BJ. Utility of removable esophageal covered self-expanding metal stents for leak and fistula management. *Ann Thorac Surg.* 2010; 89(3): 931-36.

17. Salminen P, Gullichsen R, Laine S. Use of self-expandable metal stents for the treatment of oesophageal perforations and anastomotic leaks. *Surg Endosc.* 2009; 23(7): 1526-30.