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Palliative treatment of malignant gastroduodenal obstruction: Applications of self-expandable metal stent

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Background/aims: *The aim of this study was to evaluate the efficacy, effects on survival and complications of self-expandable metal stent applications in patients with malignant gastroduodenal obstruction.* ***Methods:*** *Twenty-five patients undergoing metal stent insertion due to malignant gastroduodenal obstruction between February 2005 and July 2009 were included in the present study. In all patients, self-expandable metal stent 22 mm in diameter was inserted under scopic guidance. The patients were evaluated regarding age, gender, etiology, efficacy of stent insertion, complications, and duration of patency of the stent.* ***Results:*** *Of the 25 patients included in the study, 15 were female and 10 were male. Their mean age was 65.9 years (57–81 years). The most common etiological causes were duodenal tumor (n=10, 40%) and pancreatic tumor (n=8, 32%). Duodenal stent was inserted successfully in all patients. In 4 patients, percutaneous biliary metal stent was inserted at the same time due to concomitant obstructive jaundice. No mortality occurred during the procedure. A second stent was inserted in 4 patients due to stent migration. The patients were followed for a mean of 92 days (7 to 258 days) after the procedure. The stents remained clinically patent in all patients during the follow-up period until death.* ***Conclusions:*** *Insertion of duodenal metal stent is an effective and safe therapeutic approach in the palliative treatment of malignant gastric outlet obstruction.*

Key words: Endoscopy, malignant gastroduodenal obstruction, self-expandable metal stent

Malign gastroduedenal obstrüksiyonunun palyatif tedavisi: Kendiliğinden açılabilir metal stent uygulamaları

Amaç: *Bu çalışmanın amacı malign gastroduodenal obstrüksiyonlu hastalarda kendiliğinden açılabilir metalik stent uygulamalarının etkinliğinin, yaşam süresine etkisinin ve komplikasyonlarının değerlendirilmesidir.* ***Yöntem:*** *Şubat 2005-Temmuz 2009 tarihleri arasında malign gastroduedenal obstrüksiyon nedeniyle duodenal metal stent takılan 25 hasta çalışmaya alındı. Tüm hastalara skopi altında 22 mm metalik stent takıldı. Hastalar yaş, cinsiyet, etyoloji, birlikte sarılığın varlığı, duodenal ve biliyer metal stentlerin etkinliği yönünden değerlendirildi.* ***Bulgular:*** *Çalışmaya alınan 25 hastanın 15'i kadın, 10'u erkek idi. Yaş ortalaması 65.9 (57-81) yıl olarak saptandı. Etiyolojiler irdelendiğinde duodenum tümörü 10 (%40), pankreas tümörü 8 (%32) hasta ile en sık neden idi. Dört hastada (%16) aynı zamanda tıkanma sarılığı olduğu için eş zamanlı perkütan biliyer metal stent takıldı. İşlem esnasında morbidite ve mortalite olmadı. Stent migrasyonu 4 (%16) hastada görüldü. Bu hastalara ikinci stent takıldı. Hastaların işlemden sonra ortalama yaşam süreleri 92 (7-258) gün idi. Tüm hastalarda ölene kadar stentlerinin klinik olarak açık olduğu belirlendi.* ***Sonuç:*** *Malign mide çıkış yolu darlığının palyatif tedavisinde duodenal metal stent yerleştirilmesi etkili ve güvenli tedavi yaklaşımıdır.*

Anahtar kelimeler: Endoskopi, malign gastroduodenal obstrüksiyon, kendiliğinden açılabilir metalik stent

INTRODUCTION

Malignant gastroduodenal obstruction is one of the pre-terminal complications of advanced pancreatic, duodenal and hepatobiliary carcinomas. It leads to poor quality of life by causing nausea, vo-

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miting and cachexia (1). Palliative by-pass surgery is the traditional treatment in these patients to provide enteral feeding. However, surgical morbidity and mortality rates are high because of advanced stages of the disease and poor health status of the patients. These rates have been reported in the literature to be 30% and 15%, respectively (1,2).

Self-expandable metal stents (SEMS) are an effective alternative to by-pass surgery with lower morbidity and mortality rates in the palliative treatment of malignant gastroduodenal obstruction (2). A stent was first used in 1992 in a patient with advanced gastric carcinoma (3). Experience acquired since then has revealed that it is efficient in patients with gastroduodenal obstruction (4,5). This method is less invasive than surgery. With insertion of the stent, it is intended to relieve symptoms, enable the patients to eat, improve their general health status, and enhance their quality of life (1,2,5).

We aimed in this study to report our applications of SEMS in the palliative treatment of patients with malignant gastroduodenal obstruction in light of the current literature knowledge.

MATERIALS AND METHODS

Twenty-five consecutive patients with malignant gastroduodenal obstruction between February 2005 and July 2009 were included in the present study. None of the patients had undergone surgery previously. With insertion of SEMS, palliation of the gastroduodenal obstruction was aimed. The patients underwent standard questioning regarding oral intake, vomiting and weight loss related to duodenal obstruction. For all patients included in the study, diagnosis of gastroduodenal obstruction was made by endoscopy and contrast radiographs.

All patients were informed regarding the procedure and gave their informed consent.

Technique

The patients were sedated with midazolam and meperidine. A duodenoscope (Olympus, Japan) with working canal of 4.2 mm was advanced to the level of obstruction. Two guide wires were introduced through the malignant obstruction. The catheter pushed over one of the guide wires was pulled back, and then contrast material was given and the level of obstruction was determined radiographically. The duodenal metal stent was inserted over the other guide wire. The biliary stent was inserted at this time in the patients with concomitant biliary stent insertion. The duodenal metal stent with or without biliary stent was opened.

Patients' age and gender, etiology, presence of jaundice, technical success rate of the procedure, complications related to the stent, survival of the patients, and patency rate of the stent were recorded.

RESULTS

Of the 25 patients included in the study, 15 were female and 10 were male. Mean age of the patients was 65.9 years (57–81 years). All patients had no oral intake of solid or mixed food and had nausea. Thirteen of the patients also had vomiting. With regard to the etiologies, 10 patients (40%) had duodenal tumor, 8 (32%) had pancreatic tumor, 3 (12%) had tumor of Oddi sphincter, 3 (12%) had gastric tumor, and 1 (4%) had gall bladder tumor. Four patients (16%) underwent insertion of additional percutaneous biliary metal stent for concomitant obstructive jaundice (Figure 1). Stent migration was observed in 4 patients (16%), and a second stent was inserted in these patients. The stent migrated for the second time in a patient

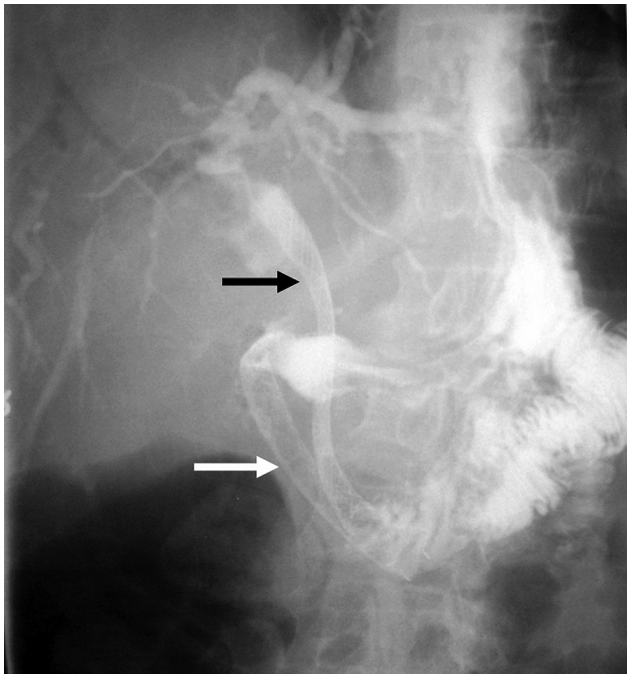

Figure 1. Images from a 77-year-old patient with Oddi carcinoma. Radiograph shows self- expandable duodenal stent (*white arrow*) and concomitant percutaneous biliary metal stent (*black arrow*).

with tumor of Oddi sphincter who underwent stent insertion, and both stents were passed via the anal route. This patient underwent gastroenterostomy. No mortality or morbidity occurred during the procedure.

Two patients were excluded from the study because one failed to return for follow-up and the other underwent gastroenterostomy due to stent migration. Twenty-three patients were followed until death. Twenty-three patients (92%) followed survived for a mean of 92 days (7–258 days).

The patients were questioned monthly regarding oral intake, nausea and vomiting. The stents remained clinically patent in all patients during the follow-up period until death.

DISCUSSION

Results of the present study indicated that insertion of duodenal metal stent is effective and safe in the palliation of malignant obstructions leading to gastric outlet obstruction. Migration was not a cause of mortality, although it was relatively frequent (16%).

Gastroduodenal obstruction is a late complication of upper gastrointestinal malignancies. In these patients, it is aimed to improve their quality of life by enabling oral food intake, reducing morbidity and shortening hospital stay. Classical palliation treatment is surgery or laparoscopic gastroenterostomy (1,2,5). Mortality following open surgery has been reported between 13 and 93%. Laparoscopic gastroenterostomy has a low success rate of 69% and an early mortality rate of 23%. Furthermore, a rate of conversion to open surgery of 20% has been reported. Endoscopic SEMS insertion appears to be superior to both methods with its technical success rate above 90% (6). It also has the advantages of enabling oral intake within a shorter time and shortening the hospital stay. In the present study, our technical success rate was 100%, which was compatible with the rates reported in the literature.

Our series is a single-center study conducted over 4.5 years. Stents were inserted successfully in all patients (Figure 2). No perforation or mortality due to the procedure occurred in the study. A second stent was required in only 4 patients (16%) due to stent migration. The complication rate was reported to be 30% in a multi-center study conducted by Nassif et al. (7). Complications included stent obstruction (21%), stent migration (6%) and duodenal perforation (3%). Telford et al. (8) reported a lower complication rate of 15%. Our results showed that SEMS insertion in gastroduodenal obstructions might be applied successfully by experienced endoscopists, with acceptable complication rates.

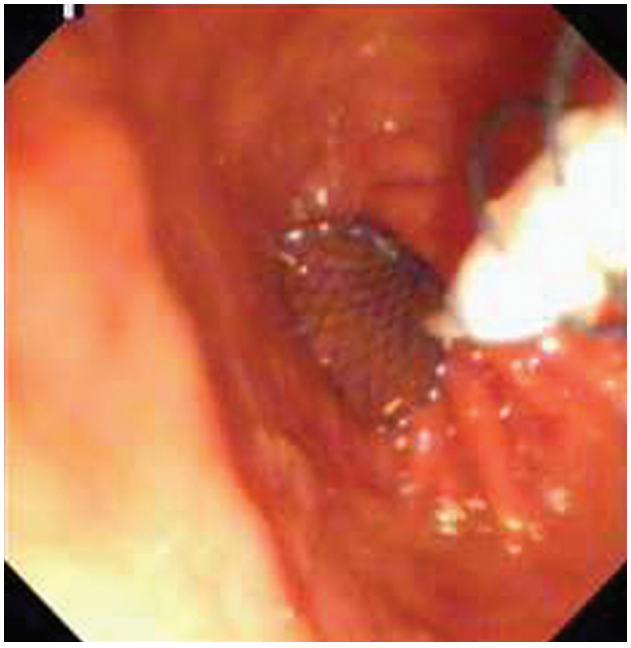

Figure 2. Position of deployed duodenal stent as seen on endoscopic view.

Endoscopic stent insertion is less costly than surgery. Early discharge of the patient following endoscopic stent insertions further decreases the costs. In the literature, hospital stay has been reported as 4 days on average after endoscopic SEMS insertion versus 14 days on average after surgery (9).

With regard to survival time, mean survival time has been reported as 92 days in the patients undergoing surgical gastrojejunostomy and as 94 days after endoscopic SEMS insertion. No significant difference exists between surgical and endoscopic procedures in terms of survival time (9). However, time for the patients to proceed to oral intake is shorter following endoscopic stent insertion. The patients undergoing surgery have a longer hospital stay (10). Our study is compatible with literature, and the mean survival time was determined as 92 days.

There are studies in the literature on metal stents releasing anti-tumoral drugs. Treatment directly targeting the tumor without subjecting the patient

to systemic side effects of the chemotherapeutic agent has been aimed. Animal studies have been performed with paclitaxel. Such stents with drug is viewed as a great advance. Further clinical studies, however, are needed (11).

In conclusion, endoscopic stent insertion under scopic guidance for malignant gastroduodenal obstruction is a minimally invasive technique. With its higher technical success rate and lower mortality and morbidity rates, it is superior to the surgical gastroenterostomy. Additionally, its popularity has been increasing currently due to its lower cost. It is an effective and safe therapeutic approach when performed by experienced endoscopists.

REFERENCES

1. Bessoud B, De Baere T, Denyd A, et al. Malignant gastroduodenal obstruction: palliation with self-expanding metallic stents. J Vasc İnterv Radiol 2005;16:247-253.
2. Yoon C.J, Song HY, Shin JH, et al. Malignant duodenal obstructions: palliative treatment using self-expandable nitinol stents. J Vasc İnterv Radiol 2006;17:319-326.
3. Topazian M, Ring E, Grandell J. Palliation of obstructing gastric cancer with steel mesh, self-expanding metalic prostheses. Gastrointestinal Endosc 1992;38:58-60.
4. Maire F, Hammel P, Ponsot P. Long-term outcome of biliary and duodenal stents in palliative treatment of patients with unresectable adenocarcinoma of the head of pancreas.Am J Gastroenterol 2006;101:735-42.
5. Morris-Stiff G, Hassn A, Young W T. Self-expanding metal stents for duodenal obstruction in advanced pancreatic adenocarcinoma. HPB(Oxford),2008;10:134-137
6. Havemann M.C, Ademsen S, Wojdemann M. Malignant gastric outlet obstruction managed by endoscıpic stenting: a prospective single-centre study. Scand J Gastroenterol 2009;44:248-251
7. Nassif T, Prat F, Meduri B. Endoscopic palliation of malignant gastric outlet obstruction using self-expandable metallic stent:s results of multicenter study. Endoscopy 2003;35:483-489.
8. Telford JJ, Carr-Locke DL, Baron TH. Palliation of patients with malignant gastric outlet obstruction with the enteral wallstent: outcomes from a multicenter study. Gastrointest Endosc 2004;60:916-920.
9. Yim HB, Jacobson BC, Saltzman JR; Johannes RS. Clinical outcome of the use of enteral stents for palliation of patients with malignant upper GI obstructıon. Gastrointest Endosc 2003;58:213
10. Doberneck RC, Berndt GA. Delayed gastric emptying after palliative gastrojejunostomy for carcinoma of the pancreas. Arch Surg 1987;122:827-829.
11. Srikureja W, Chung J.K. Endoscopic palliation of pancreatic adenocarcinoma. Current Opinion in Gastroenterology 2005;21:601-605.