

Bridge to surgery in patients with obstructive colorectal cancer

Comparison of covered and uncovered stents



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Bridge to surgery in patients with obstructive colorectal cancer : Comparison of covered and uncovered stents

AIM: Placement of self-expandable metallic stent has been used for bridge to surgery in the treatment of colorectal obstruction. Our aim was to compare technical success and complication rates of covered and uncovered inserted stents in colorectal malignant obstruction patients.

MATERIAL OF STUDY: A series of 24 obstruction colorectal cancer patients were selected and included in the study for endoscopic stenting as a bridge to surgery: group 1 (patients with covered stents, n =12); group 2 (patients with uncovered stents, n=12). Technical success and complication rates of all procedures were compared between covered and uncovered stents.

RESULTS: Stent placement was technically successful in all patients with no procedure-related complications. No significant differences between the two groups were found (p-value > 0.05). Complications were observed after the technical success.

CONCLUSIONS: Our preliminary data suggest that self-expandable metallic stent is a safe and efficacy approach in patients with malignant colorectal obstruction for bridge to surgery and there are not differences in the use of covered or uncovered stents due to low complication rates and positive outcomes in both groups.

KEY WORDS: Bridge to Surgery, Colorectal Cancer, Emergency Obstruction, Stents

Introduction

Colorectal stenting using self-expandable metal stent (SEMS) can be performed in the management of left-sided colon or rectal malignant obstruction as a bridge to surgery in order to avoid emergency surgery. Patients

with colorectal cancer may present with acute mechanical intestinal obstruction. In patients who have operable disease, emergency surgery and elective surgery after endoscopic stent are the main treatment options^{1,2}.

Colorectal stenting has been reported to be an effective method of relieving obstruction as a preoperative bridge to facilitate one-stage surgical resection of primary obstruction colorectal tumours. Overall technical and clinical success has been reported in 80-100 % of treated patients. The time between endoscopic stent and surgery necessary to restore normal physiological status of patients is unclear^{3,4}.

SEMSs are widely used to decompress malignant colorectal obstruction and enable one-stage elective surgery. However, feasibility and safety of endoscopic stenting may be affected by the type of stent used. The type of SEMSs that are best suited for each case, should be used with consideration of the features such as the stent material, design, radial force exerted and flexibility⁵⁻⁹.

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In literature, there are few data and recommendations regarding the type of SEMS to use.

The aim of this study was to compare technical success and complication rates of covered and uncovered inserted stents in colorectal malignant obstruction patients underwent to surgery after a range between 5-10 days from endoscopic stenting.

Materials and Methods

Study Populations. Twenty-four patients with acute malignant colo-rectal obstruction who underwent endoscopic stenting as a bridge to surgery, between 2010-2015 at Clinical Surgery Unit of the “Magna Graecia” University of Catanzaro were retrospectively reviewed. They were selected and divided in two group: group 1 (patients with covered stents, n =12); group 2 (patients with uncovered stents, n=12).

Table I - Clinico-pathological features of patients.

	N
Overall series	24
Age	
<64	9
>64	15
Gender	
male	10
female	14
Tumor site	
left colon	13
rectal	11
TNM staging classification	
T3-4N0-2M0	24
Histology type	
adenocarcinomas	24
Histology grade	
G1-2	18
G3	6

All patients underwent a preoperative abdominal X-rays and whole body contrast-enhanced Computed Tomography (ceCT). Furthermore, an intraoperative fluoroscopy was also performed to obtain a better anatomical depiction of the lesions.

All procedures were preceded by rectal enemas and placement of nasogastric. Based on the compliance of the patients, each procedure was carried out with the patient under deep sedation or conscious anesthesia with midazolam, propofol and fentanyl. Colonoscopes used were: Olympus CF-Q160L and Pentax EC38-i10F.

Patients were initially placed in the left lateral decubitus position and rotating the patient into the supine position allowed for a better anatomical view under fluoroscopy. The stricture was crossed with guide wire, and contrast (Gastrografin diluted in saline 0.9%) was then injected through a catheter that had been threaded over the guide wire to estimate the length of the stricture. The stent was approximately apposed 2 cm above and 2 cm below of the strictures. Covered and uncovered SEMS were used. Stents characteristics are shown in table II. Not eligible patients for these procedures were: non-symptomatic patients with malignant colorectal obstruction, palliative endoscopic stenting, benign stenosis, clinical evidence of perforation or peritonitis, extension of rectal stenosis under 5 cm to the anal sphincter. Procedures were terminated after that passage of fecal material and gas through the stent had been observed. Abdominal X-rays were obtained after each procedure to evaluate placement and expansion of the stent and to check for perforation. All patients were underwent to radical surgery after a range between 5-10 days from endoscopic stenting. In the global series there were 24 adenocarcinomas; TNM staging classification for colorectal cancer and the histopathological grading were performed according to the AJCC 7th Edition^{10,11}. The clinic-pathological features of the patients are summarized in Table 1. Signed consent from individual patients were obtained to conduct the study.

Statistical analysis. T-test was used to statistically compare means. Correlations among the all analyzed parameters and the main clinico-pathological features were

TABLE II - Complication Rates

	Overall Population n=24	Group 1 (Covered Stent) n=12 50%	Group 2 (Uncovered Stent) n=12 50%	p value
Perforation		0/12 0%	0/12 0%	> 0.05*
Bleeding		1/12 4.1%	1/12 4.1%	> 0.05*
Abdominal Pain		2/12 8.3%	1/12 4.1%	> 0.05*
Stent Migration		1/12 4.1%	1/12 4.1%	> 0.05*
Tenesmus		1/12 4.1%	2/12 8.3%	> 0.05*

* Statistically not significant

performed by Chi-square test (χ^2). $p < 0.05$ was considered significant. All statistical analyses were performed with the SPSS statistical software package (SPSS, Inc., Chicago, IL).

Results

No significant differences between the two groups were detected with regard to complication rates ($p > 0.05$) (Table 2). Covered (group 1) and uncovered (group 2) SEMS were placed in 24 patients with malignant colorectal obstruction. The overall technical success rate was 100% (24/24) (Fig. 1). One case of perforation occurred in group 1, but it is due to the extreme suffering tissue. One case of migration and bleeding was in both covered and uncovered groups and did not affect surgical treatment. Bleeding caused by the guide wire, were treated with endoscopic injections of adrenaline (1/100). Two cases in group 1 and one case in group 2 of abdominal pain were observed and treated with anti-inflammatory therapy. One case in group 1 and two cases in group 2 of tenesmus were observed and spontaneously resolved. Complications were observed after the technical success.

Discussion

Despite the widespread use of screening, colorectal cancer occurs in 8-29% of cases with a occlusive framework-type. The occlusion interesting for 70% of cases the left colon^{12,13}. Current therapeutic options for resolving the occlusive are represented by the endoscopic stent-

ing and surgery in emergency. Recently, studies of literature expressing dissenting views about the superiority of one or the therapeutic approach¹⁴. In order to bridge surgery, the use of the stent for the resolution of acute occlusive allows to switch emergency surgery in an elective, to decompress the colon more quickly than surgery in emergency, to correct any electrolyte imbalances and to improve the overall clinical condition of the patients. It also allows to perform a more accurate staging of the tumour and in case of rectal obstruction, it allows to consider the possibility of neoadjuvant therapeutic treatment^{15,16}.

In a retrospective study based on 144 patients, *Salamone et al*¹⁷ evaluate clinical and cost effectiveness of colonic stenting as a bridge to surgery and as a palliative treatment in acutely obstructed left-sided colon cancer. In this analysis 96 patients underwent surgical treatment, 48 underwent decompressive stenting. Result analysis shows that colonic stenting followed by elective surgery may be safer and cost-effective, comparing to emergency surgery for left-sided malignant colonic obstruction.

In a study by *Banchini et al*, 73 patients underwent the positioning of colorectal stent for colorectal cancer or extrinsic compression under double fluoroscopic and endoscopic control. In 35 patients the stent was inserted as palliative measure and 38 underwent stent as bridge to surgery. Results show that the placement of the stent was achieved in all patients, with 94% (69/73) of clinical success. Perforation occurred in two patients, one related to the guide wire and the other to balloon dilatation of the stent. Reobstruction occurred in 3 patients and migration in 9. The mortality after stent placement was 4.1% (3/73). They perform a colostomy or an ileostomy in 4 patients bridge to surgery and in 4 pal-

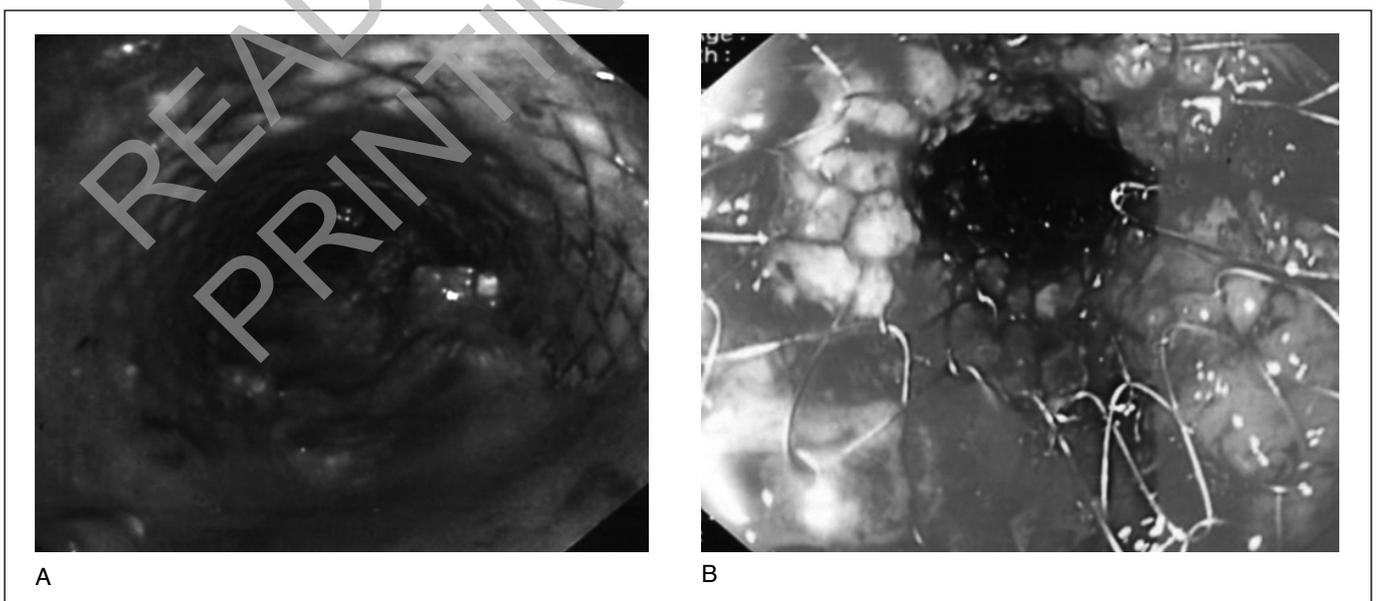


Fig. 1: Endoscopic view after stent placement

liative, for a total of 8 stoma (10.95%). In conclusion the authors say that the usefulness of colorectal stent can be considered an alternative to colostomy especially in unresectable patients¹⁸.

Emergency surgery is avoided up to 94% of cases when technical success, represented by the correct positioning and release of the stent through the stenosis, is associated with the clinical success, the resolution of the colon obstruction in a short time (24-96 hours)¹⁹.

Cantarella *et al* in their study based on 2 patients, successful decompression, defined as complete relief of bowel obstruction as judged by clinical symptoms and radiographic observation, was achieved²⁰.

Colonic or rectal stent placement is associated with some complications, including stent migration, perforations, rectal bleeding, fecal impaction, abdominal pain, and tenesmus, of which stent migration and perforation are the most serious complications²¹⁻²⁵.

If endoscopic stenting is performed in reference centers, with experts and a careful selection of patients, it reduces the rates of morbidity and mortality, the time and costs of hospitalization. It also avoids in patients with advanced oncological disease, palliative solutions such as decompressive colostomy which would adversely affect the quality of life of the patient²⁶⁻²⁷.

When the purpose of the stent placement in obstruction colorectal cancer patients is the bridge to surgery, obvious doubts arise about the choice of the most suitable stent to use.

The aim of this study was to evaluate, in terms of technical success and complication rates, which are the features of the different stent models available on the market through a retrospective analysis of patients undergoing endoscopic stenting purposes bridge to surgery.

Our study has some limitations. The number of patients treated was relatively small, and secondly, we did not include partially covered group.

In conclusion, our preliminary results demonstrated that SEMS placement for bridge to surgery in patients with colorectal malignant obstruction was a safe and effective approach, and there were no differences in terms of technical success and complication rates between covered and uncovered

stents used. Although these data are promising, further studies in a large series of patients will be necessary to confirm our first results.

Riassunto

Il posizionamento delle protesi metalliche autoespansibili sono utilizzate come ponte per la chirurgia nel trattamento dell'ostruzione acuta coloretale. Scopo del nostro studio è stato quello di confrontare le protesi metalliche autoespansibili coperte e scoperte nei pazienti affetti da ostruzione maligna coloretale, in termini di successo tecnico e complicanze. I nostri dati preliminari suggerisco-

no che le protesi metalliche autoespansibili impiegate come ponte verso la chirurgia, rappresentano una approccio sicuro ed efficace nel trattamento dell'ostruzione coloretale maligna per l'alta percentuale di successo e le basse complicanze. Non sono state tuttavia evidenziate differenze tra le protesi coperte e scoperte in termini di tassi di successo tecnico e complicanze.

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