

ADVANCES IN ENDOSCOPY

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The Role of Stents in Obstructive Colorectal Cancer

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G&H You recently conducted a study evaluating the use of stents in obstructive colorectal cancer. Could you describe the center where this study was performed?

GF Hospital Clinic in Barcelona, Spain is a tertiary referral center affiliated with the University of Barcelona that offers high-technology services to a population of more than 500,000 people. The Endoscopy Unit at Hospital Clinic performs over 20,000 procedures each year, including 12,000 colonoscopies, 800 endoscopic ultrasonographic studies, and 500 endoscopic retrograde cholangiopancreatographies, among other complex procedures. In the last 10 years, the Gastroenterology Department of Hospital Clinic has focused on the prevention, diagnosis, and treatment of colorectal cancer and has led the introduction of a general population screening program in Spain. In close collaboration with the Department of GI Surgery (which has vast experience in laparoscopic colorectal cancer resection, with more than 250 operations performed each year), it is one of the primary referral centers for the treatment of this disease in Spain.

G&H What were the major findings of your study?

GF We designed this study, which was recently published in the *American Journal of Gastroenterology*, after having several patients in whom the quality of life was suboptimal after stent insertion with a palliative criterion. We had been convinced that colonic stents were an excel-

lent alternative to surgery, not only for cases that were expected to undergo curative surgical therapy, but also for those who were not eligible for surgery.

Our study was a retrospective analysis of all consecutive patients who underwent colonic stenting between December 2003 and November 2008. All of the procedures were performed by a senior endoscopist with more than 30 years of experience. All of the stents were inserted at the Endoscopy Unit under conscious sedation and followed the same through-the-scope technique combined with fluoroscopy. The main objective of the study was to investigate the incidence of complications related to stent placement.

At the end of the follow-up period (median, 130 days; range, 4–945 days), clinical failure occurred in 21 (51%) patients and was always due to complications: migration (n=9; 22%), obstruction (n=7; 17%), perforation (n=3; 7%), and tenesmus (n=2; 5%). Perforation was a severe complication that led to death in all cases. Median complication time after stent insertion was 33 days. In the bridge-to-surgery group, primary anastomosis was only possible in 44% of patients, and this low figure was due to an exceptionally long time between stenting and surgery. Although clinical failure was not associated with any tumor-related factor, the majority of patients with stent migration and perforation had been previously treated with chemotherapy.

G&H It appears that colonic stents may be more popular in Europe than in the United States. How do your surgeons view the use of these devices by endoscopists?

GF I think that, in general, there is consensus among surgeons that stents play an important role in the management of malignant colorectal obstruction. Obstruction is

a dreaded complication of colorectal cancer because of the high mortality and morbidity associated with emergency surgical decompression. In addition, colostomy stoma is more frequently performed during emergency surgery than planned surgery, and cannot be reversed in up to 50% of patients. In this setting, it appears reasonable to look for an alternative emergent decompression method. In another study performed in Spain, by Garcia-Cano and associates, the majority of patients were referred by surgeons to endoscopists for stent insertion. It is possible that physicians in community hospitals or hospitals with a low volume of emergency surgeries think that the efficacy and safety of stent placement is better for patients with malignant colonic obstruction.

G&H What is the role of endoscopically placed colonic stents in patients expected to undergo curative resection?

GF The appropriate indication for stent placement appears to be a bridge to surgery. When used for this indication, stents allow for a good preparation of the colon for surgery, and primary anastomosis is possible in 85% of patients. However, the use of colonic stents in this group of patients should only be considered when surgery is promptly scheduled (within 1 week) after the stent insertion because there is a higher risk of acute complications as the number of days after bowel cleansing increases.

G&H Why do stents migrate so often, and what design changes might reduce this problem?

GF There are no data examining the influence of stent characteristics (ie, diameter, design, or material) on the radial and longitudinal forces exerted by enteral stents. In our study, a Wallstent that was 22 mm in diameter was used in almost all of the patients. This choice was made based upon the availability and excellent radiopacity of these stents. One could speculate that this choice could have influenced the outcome, but there are no randomized studies comparing the use of 22-mm stents versus 25-mm stents. Stents with large proximal diameters may exert too much pressure on the colonic wall and may be responsible for more perforations. Therefore, the choice of the largest diameter does not appear to be the right solution. Perhaps newer stents made of platinum will overcome this issue.

Another potential factor that could be related to migration of stents is the tightness of the stenosis. In 40% of our cases, the stenosis could be traversed by the scope, but the ability to pass the stenosis not only depends upon its tightness, but also the expertise of the endoscopist and the type of endoscope used.

We believe that chemotherapy was the most important factor that influenced the high rate of migration (and other complications such as perforation). There is no information regarding the effect of chemotherapy on obstructive symptoms, but the potential reduction of the tumor secondary to induced necrosis could be an explanation for stent migration and perforation. In addition, we should take into account the premature closure of a study by van Hooft and colleagues due to a high number of serious adverse events in patients in the nonsurgical arm.

G&H How effective are self-expanding metal stents in different patient populations?

GF Self-expanding metal stents have been used in patients with obstructive colorectal cancer with good results (ie, technical and clinical success rates of 93% and 88%, respectively). Theoretically, stent placement could avoid unnecessary operations in patients unfit for surgery and could provide better quality of life. However, the high rate of late complications demonstrated in our study limits the use of stents in patients with incurable obstructing colorectal cancer who are eligible for chemotherapy and have a long life expectancy. In this set of patients, treatments other than self-expanding metal stents should be considered.

G&H Based upon your study, what recommendations do you have for other endoscopists considering colonic stents in colorectal cancer patients?

GF Placement of self-expanding metal stents does not appear to be as effective as previously suggested, due to the development of late complications. Therefore, it is crucial to very carefully select only those patients who will truly benefit from this therapeutic modality. In patients with potentially curable lesions, the use of colonic stents for malignant obstruction should only be considered when surgery is promptly scheduled (within 1 week) after the stent insertion. For patients with unresectable cancer, other considerations should be taken into account. First, the introduction of new chemotherapeutic treatments for patients with incurable cancer will change the natural course of the disease and will likely improve survival. Second, chemotherapy can reduce the size of the tumor and may improve obstructive symptoms. Third, colonic stenosis is not synonymous with clinical obstruction, and symptoms of obstruction can be present in the absence of a stenotic tumor. Fourth, prophylaxis of a further occlusion is not an accurate indication for colonic stenting, particularly if chemotherapy is planned. Therefore, until we have more data from larger prospective studies

and more conclusive results, we strongly recommend that extreme caution be undertaken when considering colonic stent placement for palliative treatment. Surgery has to be considered in patients with incurable obstructing colorectal cancer who are eligible for chemotherapy and have a long life expectancy.

G&H What are the next steps for research in this area?

GF The next logical step in this area is to further refine the indication and to determine which groups of patients will benefit from self-expanding metal stents and which will not. Comparative studies should also be performed in order to define whether patients with incurable colorectal cancer treated with stents experience a better outcome and quality of life than those who undergo surgery. Another important aspect that needs to be addressed in this field is whether or not the type of stent (in relation to material, diameter, length, and release system) may have an impact in the overall outcome.

New treatments in clinical practice are usually accepted if they are based upon the results of well-conducted randomized controlled trials. Obstructive colorec-

tal cancer is not very common, and most centers end up treating a small number of patients every year. Therefore, adequate randomized controlled trials are likely possible only if a large number of centers work together as a consortium or an established group, which often occurs in other medical specialties. Studies conducted by such research groups will likely help answer common clinical problems that physicians, surgeons, and patients face on a day-to-day basis.

Suggested Reading

Fernandez Esparrach G, Bordas JM, Giraldez MD, et al. Severe complications limit long-term clinical success of self-expanding metal stents in patients with obstructing colorectal cancer. *Am J Gastroenterol.* 2010;105:1087-1093.

García-Cano J, González-Huix F, Juzgado D, et al. Use of self-expanding metal stents to treat malignant colorectal obstruction in general endoscopic practice (with videos). *Gastrointest Endosc.* 2006;64:914-920.

van Hooft JE, Fockens P, Marinelli AW, et al; Dutch Colorectal Stent Group. Early closure of a multicenter randomized clinical trial of endoscopic stenting versus surgery for stage IV left-sided colorectal cancer. *Endoscopy.* 2008;40:184-191.

García-Cano J. Endoscopic insertion of self-expanding metal stents as first step to treat malignant colorectal obstruction. *Am J Gastroenterol.* 2005;100:1203-1204.

Small AJ, Coelho-Prabhu N, Baron TH. Endoscopic placement of self-expandable metal stents for malignant colonic obstruction: long-term outcomes and complication factors. *Gastrointest Endosc.* 2010;71:560-572.