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Stents in the management of benign colorectal strictures

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ABSTRACT

Benign colorectal strictures (BCRS) represent a challenging clinical scenario and are difficult to manage. They mostly originate from postoperative anastomotic strictures, diverticular disease, or Crohn's disease. Surgery has traditionally been the mainstay of treatment but is associated with high complication rates and morbidity. Nonsurgical strategies for managing BCRS include endoscopic dilation, incision with electrocautery, microwave coagulation therapy, laser therapy, and local steroid injection. These modalities are often associated with high complication and recurrence rates. Stent therapy is an alternative nonsurgical option. It has demonstrated good results in the setting of malignancy, both as bridge to surgery and as palliative treatment. Stents have been used in the benign setting with the same indications. However, evidence in this regard is very scarce and inconclusive, and therefore this option is still controversial. There is still uncertainty in indications to stent in BCRS, as well as in timing of both stent placement and removal. The most commonly employed stents have been self-expanding metal stents; experience with plastic and biodegradable stents is less common. The overall efficacy for relief of obstruction in the benign setting seems to be lower than in the setting of malignancy. It seems to be effective in the short and medium terms, but stricture recurrence is quite common, occurring in nearly half of the patients. The few available data with biodegradable stents suggest that they may become an important treatment option in the future. Stenting in the benign setting has been associated with significant morbidity and complications, more so than in the malignant setting. Uncovered stents for example are currently contraindicated for the treatment of BCRS, unless they are used as bridge to surgery. Stenosis arising from inflammation, such as observed in acute diverticulitis and Crohn's disease, as well as radiation-induced strictures may be more prone to complications, thus more caution is recommended while considering stenting in this setting. Future studies should be aimed at defining the best subpopulation of patients that would benefit from stent placement, and new stents should be designed to increase long-term patency rates and reduce complications. In this article, we review the state of art of stenting in the benign setting and point toward future avenues in the management of this challenging clinical scenario.

1. Introduction

Benign colorectal strictures (BCRS) mostly originate from postoperative anastomotic strictures, diverticular disease, and Crohn's disease. Other causes include ischemic colitis, radiation therapy, and use of nonsteroidal anti-inflammatory drugs [1,2]. Anastomotic strictures occur in 3%-30% of patients undergoing colorectal surgery [3,4], and Crohn's disease–associated strictures occur in nearly one-third of patients within 10 years from diagnosis, usually found in difficult-to-reach locations, such as the terminal ileum, cecum, and ileocolonic anastomosis [2,5].

The symptoms observed in patients affected by colonic stenosis (such as nausea, vomiting, obstipation, abdominal distention, and tenderness) are due to the impairment of fecal and gas transit, with severity depending on the diameter of the stricture. Symptoms usually develop for stenosis less than 20 mm in diameter, with increasing worsening of the symptoms as the lumen tends to narrow down to a diameter of 10 mm or less, up to the point of complete or near-complete obstruction and the development of acute colorectal obstruction [6].

The goal of any therapeutic approach in this setting is that of eliminating, or reducing, the mechanic obstruction and hence restoring a normal or nearly normal luminal patency. This serves to prevent or reduce massive colonic distention and its associated clinical manifestations and complications.

Surgery, either colostomy or resection, has historically been the mainstay of treatment for BCRS, when patients did not respond to

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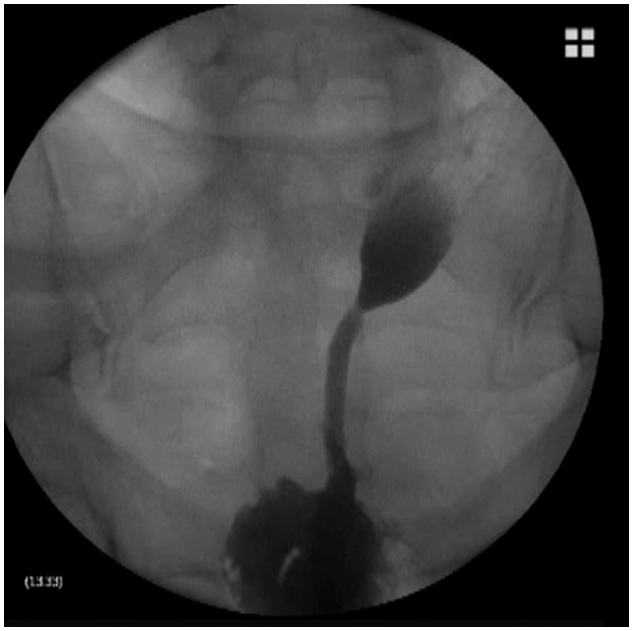

Fig. 1. A long postradiotherapy stricture of the rectosigmoid junction.

conservative medical treatment or in the emergency setting or both. However, surgery is plagued by long hospitalization stays, high cost, and significant complications and comorbidities. This is especially true in high-risk patients such as those with older age and poor nutritional state, when the anastomosis is located very close to the anus and in the emergency setting [7]. Moreover, in the case of anastomotic strictures, revisional surgery is often technically challenging owing to significant fibrosis, and even impossible if the anastomosis is very close to the anal verge. These patients are at risk of having a permanent stoma and hence a reduced quality of life [8].

All these facts have stimulated a full body of research aimed at finding nonsurgical endoscopic approaches for the management of these conditions. Ideally, endoscopic treatment should provide early, easy, and durable symptom relief with a minimal number of interventions, minimal morbidity, and reduced hospital stay and costs. Endoscopic modalities may be used, analogously to the malignant setting, either as primary treatment or as bridge to surgery, that is, for temporary relief of the acute obstruction and subsequent elective surgery.

The most commonly performed treatment modality for BCRS has been endoscopic dilation, either by balloon [9-11], or rarely, by Savary bougie dilators [12]. However, these easy-to-apply and cheap methods have been associated with relatively high recurrence rates and have a significant risk of perforation [9]. Other, less common, modalities of endoscopic treatment include incision with electrocautery [13], microwave coagulation therapy [14], laser therapy [15], and local steroid injection, often as adjunct to other techniques [2,4].

Stent therapy is another important endoscopic option. Placement of self-expanding metal stents (SEMS) has emerged in the past 2 decades as an important, minimally invasive treatment option for colorectal obstruction of any etiology. Despite the presence of some controversy, SEMS are now considered a potential cost-effective alternative to emergency surgery in malignant colorectal obstruction, either as bridge to surgery or as palliation of inoperable cancer. SEMS have a clinical success rate of 80%-90% and avoid emergency surgery in more than 90% of cases, with acceptable rates of complications [16]. They also decrease perioperative complications by permitting colonic cleansing for surgery, serve to gain time until the patient's conditions stabilize and allow further preoperative diagnostic tests to be performed.

The success of stents in the malignant setting has motivated physicians to employ them for benign indications as well, such as colonic fistula or anastomotic leaks, perforations, and obstruction [17]. Different types of stents have been used either for primary nonsurgical treatment of BCRS or as bridge to surgery in cases of acute obstruction. However, this type of treatment is still controversial and is not widely accepted mainly because of the potential risk of serious adverse events. In a review article of 2002, involving approximately 600 patients with colorectal obstruction, SEMS were used for benign indications in only 3% of cases [18].

Usually stents should be considered for those patients who have recurrence of BCRS after a certain number of dilations. More frequently, these strictures recur as secondary to radiotherapy or combination of radiotherapy and surgery or more rarely secondary to ischemic damage of the colon or diverticular disease. Moreover, recurrent strictures are generally longer (Figure 1), with a quite narrow lumen and irregular morphology (Figure 2).

Evidence regarding stenting in BCRS is limited, comprising primarily singular case reports [19-32] or short retrospective series with 10 or less patients [33-48]. Only a few case series with more than 10 patients are available [1,2,5,49-54]. This explains why there is still uncertainty in indication to stenting in benign colorectal diseases as well as in timing of stenting and timing of stent removal. In this review article, we consider the types of stents employed, techniques of insertion, as well as efficacy and safety of this treatment modality for BCRS.

2. Types of stents

2.1. General principles

A great variety of stents exist, and several types of dedicated colonic and non–dedicated colonic (mainly esophageal) have been employed for the treatment of BCRS. The optimal stent design for BCRS is yet to be achieved. Some of the characteristics that would be required for stenting benign lesions in the colon include a large diameter; high expansion ratio; axial flexibility; optimized delivery system, which would allow access to difficult locations; minimal or no tissue ingrowth or overgrowth; no stent-induced mucosal or parenchymal injury; and good efficacy with a minimal number of endoscopic procedures necessary.

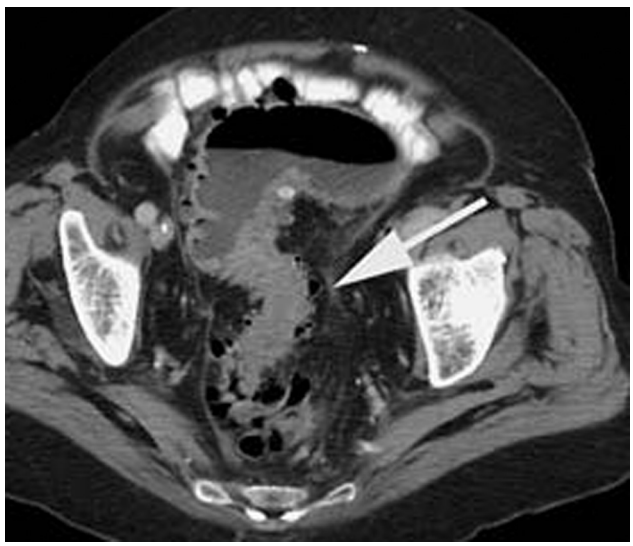

Fig. 2. A CT scan showing colonic obstruction due to a narrow and irregular stricture secondary to diverticular disease.