

Research Article

Use of Stenting for Obstructing Rectal Cancer as a Bridge to Neoadjuvant Therapy and Surgery: A Case Series

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Abstract

Objective: Self-Expanding Metal Stents (SEMS) have been increasing used as a bridge to surgery when compared to traditional diverting colostomy for colon cancer. Prospective studies have shown SEMS to be associated with lower complication rates, shorter hospital stay, and less definitive stoma placement when compared to traditional diverting colostomy for colon cancer. The role of SEMS in the management of obstructing rectal cancers is not well defined.

Methods: This is a retrospective case series of 4 patients with obstructing rectal cancer who received a SEMS as a bridge to neoadjuvant and surgical therapy.

Results: All SEMS were placed successfully, and patients quickly started and completed neoadjuvant therapy without a diverting stoma. All patients were able to achieve curative local resections. Intra-operatively all patients had significant induration surrounding the SEMS as well as local perforation in 2 patients. The SEMS did have complications of anorectal pain and fecal impaction. Of the 4 patients, 1 is anastomosed without ostomy, 1 is a candidate for anastomosis but lost to follow up, and 2 have permanent colostomies.

Conclusions: The use of SEMS for obstructing rectal cancer allows the prompt initiation and successful completion of neoadjuvant therapy. Patients were able to avoid a stoma for a period of time. However, SEMS in the setting of neoadjuvant therapy are not without complication and may compromise anastomotic integrity and have detrimental effects on anastomotic healing.

Keywords: Bridge to Neoadjuvant Surgery; Rectal Cancer; Self Expanding Metal Stents; SEMS

Introduction

There are approximately 39,220 new diagnoses of rectal cancers each year, in which 10-30% of patients present with a large bowel obstruction [1,2]. For these patients, it is imperative to restore the continuity of bowel to reduce the risk of perforation and abdominal sepsis. Traditionally, this is accomplished with a diverting ostomy, but in recent years Self-Expanding Metal Stents (SEMS) have been utilized as a non-operative bridge to surgery for colorectal cancer. The first reported use of a metal stent in the setting of colonic obstruction was for palliation of obstructing colon

cancer by Dohmoto [3]. The role of SEMS has continued to grow, and now prospective studies to have shown them to be associated with lower complication rates, shorter hospital stay, and less definitive stoma placement when compared to traditional diverting colostomy for obstructing colon cancer [4-6]. SEMS are now one of the four possible primary treatment modalities for resectable, obstructing colon cancer by the National Comprehensive Cancer Network and the World Journal of Emergency Surgery [7,8].

The decision to treat patients with an operation versus stenting depends on the location of the lesion, degree of obstruction, future neoadjuvant and surgical treatment plans. For partially obstructing rectal cancer with minimal symptoms, no colonic distension, perforation, or peritonitis, neoadjuvant therapy if indicated

should be given to reduce tumor size and decrease local recurrence rate [9,10].

Despite advances with the use of SEMS, the role of SEMS in the management of obstructing rectal cancers is not as well defined. Advantages of stenting include early initiation of neoadjuvant therapy, avoidance general anesthesia and operative morbidity for creation of the diverting ostomy as well as avoidance of a stoma for a period of time. Some current prospective studies include obstructing lesions of the rectum/rectosigmoid junction in their data and overall analysis of obstructing colorectal cancers, but this data is very limited as these studies focus on colonic lesions [4,5]. Published data on the use of SEMS for rectal lesions as a temporizing bridge for patients to receive neoadjuvant chemoradiation prior to surgery instead of a diverting ostomy is limited to single patient case reports that show favorable outcomes [11,12]. In this paper, we are reporting a case series of our experience with stenting of obstructing rectal cancer as a bridge to neoadjuvant and surgical therapy.

Methods

This is a retrospective case series of 4 patients at a single institution with newly discovered, obstructing rectal cancer who had a self-expanding metal stent placed instead of a diverting stoma as a bridge to receive neoadjuvant therapy followed by definitive surgery. Informed consent was obtained from all patients included in this report.

Results

Patient Summary

Our patients were between the ages of 60 and 73 and seen between September 2013 and August 2016. All were found to have a newly diagnosed, nearly obstructing mid to high rectal cancer on colonoscopy. The lesions were causing 75-99% obstruction of the bowel lumen at ranges 7-15 cm (average 11 cm) from the anal verge. Pathology from biopsy was positive for adenocarcinoma or high grade dysplasia. Staging CT showed no distant metastasis.

Patient A

A 67 year old woman who presented with constipation and bloating, mass at 10 cm from the anal verge, pathology of adenocarcinoma. Stent placement was complicated by fecal impaction treated with endoscopic washout of stent. She was also found to have liver metastases during neoadjuvant treatment. Preoperative staging T3N1Mx. She underwent a low anterior resection with diverting loop ileostomy, which was well tolerated. She was found on readmission to have a perianastomotic abscess with anastomotic leak on gastrograffin enema that was treated with washout and drainage. She then underwent a left liver lobectomy for metastatic rectal adenocarcinoma. A gastrograffin enema study showed no

anastomotic leak, and she underwent closure of her loop ileostomy and restoration of bowel continuity. She was been seen in follow up and now recovering without complaint.

Patient B

A 73 year old man who presented with hematochezia and pencil stools, mass at 10 cm from the anal verge, with pathology of adenocarcinoma. Stent placement was well tolerated and without complication. Preoperative staging T3N0M0. He then underwent a low anterior resection with diverting loop ileostomy, which was uncomplicated and he was discharged home. It was then found he developed a perirectal abscess requiring multiple washouts for drain placement. He also underwent a robotic assisted wedge resection of his left lower lobe for a suspicious mass with pathology of metastatic rectal adenocarcinoma. He completed adjuvant therapy and is a candidate for loop ileostomy reversal, but has been lost to follow up.

Patient C

A 60 year old woman who presented with weight loss and rectal bleeding, mass at 14 cm from the anal verge, with pathology of adenocarcinoma. Stent placement was well tolerated without complication. Preoperative staging T1N0M0. She then underwent a low anterior resection with diverting loop ileostomy that was complicated by postoperative anastomotic dehiscence and leak. This was managed with multiple endoscopic washouts and drainage. She also developed a postoperative ileus requiring short term TPN. On repeat imaging the abscess cavity was adequately drained, and PET/CT scan showed no evidence of recurrent or metastatic disease. She then underwent a Hartmann's procedure with resection of previous rectal anastomosis and ileostomy takedown and end colostomy formation. Primary anastomosis was not possible secondary to pelvic abscess discovered intraoperatively and dense pelvic adhesions. Pathology was negative for tumor, and she has been seen in follow-up and is well healed with functioning ostomy.

Patient D

A 60 year old man who presented with positive fecal occult blood test and mass at 7 cm from anal verge with pathology of high grade dysplasia. Preoperative staging T1N0M0. He started neoadjuvant therapy but at 2 weeks began to develop significant symptoms of obstruction and a SEMS was placed at that time. He did not tolerate the stent well, with significant anorectal pain and fecal incontinence. It was attempted to reposition the stent endoscopically but this failed due to tumor infiltration. He underwent low anterior resection with end colostomy because the distal rectum was unable to be mobilized circumferentially to perform an anastomosis. On pathology it was found he had positive distal margins, followed by completion abdominoperineal resection on the same admission. There was a ureteral injury during the second

surgery, which was repaired by urology. He has been seen in follow up with functioning ostomy and voiding without difficulty.

SEMS placement and complications

3 patients presented with a high grade obstruction, and the decision was made to place a SEMS as a bridge to neoadjuvant therapy before surgery. 1 patient presented with rectal bleeding without obstruction and began neoadjuvant treatment, but developed obstructive symptoms during the second week of their neoadjuvant treatment and a stent was placed at that time. The stents were placed by 2 GI endoscopic interventionists at our institution, either using direct visualization with endoscopy or combined endoscopy and fluoroscopy approach at the discretion of the attending performing the procedure. The Boston Scientific Wallflex uncovered stent was used in all cases. The 22 × 90mm colonic stent was used in 3 patients, and a 22 × 60mm stent was used in patient C. The stent was well tolerated in 2 of the 4 patients. 1 developed a fecal impaction shortly after stent placement that was managed with repeat endoscopy with washout of the impaction, and 1 patient developed severe anorectal pain and fecal incontinence.

Neoadjuvant therapy

All our patients did well with neoadjuvant chemotherapy and radiotherapy. The 3 patients who had stents placed as a bridge to neoadjuvant started therapy quickly, on average 33 days after stent placement (range 30-38 days). The patient who had a stent placed during neoadjuvant was able to resume treatment one week after stent placement. All patients received a 6 week course of 5-FU as chemotherapy with radiation treatment. 2 patients were treated at our facility, and 2 were treated by their local physicians at their request.

Surgical resection

All patients were able to proceed with definitive surgical therapy, on average 122 days following stent placement (range 78-178). All patients underwent a laparoscopic mobilization of the splenic flexure, low anterior resection, removal of rectal stent, and ostomy creation. Intra-operatively, it was found that all patients had significantly indurated rectum from tumor/neoadjuvant therapy with difficult tissue planes, and in 2 cases the stent had caused perforation of the rectum. Those patients that had an anastomosis, the integrity was confirmed with intraoperative endoscopy and no air leak on insufflation test.

Surgical complications

There was an intraoperative urethral injury, repaired primarily with posterior urethroplasty by urology. One patient developed ileus requiring short term TPN. One patient developed high output from their diverting loop ileostomy, and this was managed with medical therapy. The average length of stay from the index operation was 9.25 days (range 4-15 days). Of the three patients with

rectal anastomosis during their primary surgery, all developed anastomotic leaks that were managed with washout and drainage.

Discussion

All of the patients who had SEMS placed for obstructing rectal cancer were able to successfully receive the optimal treatment for their rectal cancers without the morbidity of general anesthesia and abdominal surgery prior to neoadjuvant therapy. The SEMS were placed endoscopically by interventional gastroenterologists on a single attempt. This allowed patients to start neoadjuvant therapy quickly (within 33 days of diagnosis) and then proceed with definitive surgical R0 resection without upfront abdominal surgery for diversion.

However, the SEMS were not without complications. One was occluded by fecal impaction that required endoscopic washout. Although well tolerated for upper rectal lesions, the patient with the lesion closest to the anal canal (7 cm from the anal verge) experienced significant pain and incontinence during his treatment, requiring a repeat endoscopic procedure attempting to change the stent location, with no success. He completed his neoadjuvant therapy but required narcotic pain medication for symptom control. This issue has been well described in the literature, and is one of the main reasons why stents are not ideal for patients with low rectal cancer [4,5,13]. The remainder of our patients had lesions at 10 cm or higher, and they did not develop tenesmus, incontinence, or pain. So clearly tumor location limits the group of patients who will benefit from SEMS, as the distal anal canal needs to remain free of the stent.

A second issue was what we encountered intra-operatively. It was found that all patients had significant induration in the rectal wall in the area of the stent and in the surrounding tissues. It was difficult to obtain a soft distal rectal wall, as the stent had often infiltrated into the tumor and the distal rectum. In 2 of the 4 patients, the stent was incorporated into a local perforation of the rectum as well. The compromise in the integrity of the rectal wall is likely what led to anastomotic issues with all 4 of our patients. One patient had to be taken back for a completion proctectomy secondary to positive margins. Of the 3 that had an anastomosis with proximal diversion, initial anastomotic healing did not occur in any of them. One of these patients never healed her anastomosis and had to have a completion proctectomy months later. The other 2 patients developed peri-anastomotic abscesses postoperatively, that eventually healed and one of these patients did proceed with restorative surgery while the other was lost to follow up.

Without the availability of SEMS and the expertise required to place it in an emergent setting, all of our patients would have received initial diverting stomas. However, initial surgery and diversion prior to treatment of the cancer is not ideal, as patients have to undergo general anesthesia, and then wait until they re-

cover from that initial surgery prior to initiating neoadjuvant therapy. This can be further complicated if significant dilatation of the colon is present and they undergo an open abdominal surgery that delays neoadjuvant treatment even longer. However, the SEMs were not without complication and resulted in local perforation in half of our patients and significant intraoperative technical difficulties with distorted, fibrotic tissue. Post-operatively none of the anastomoses created following SEMs placement were able to heal by primary intention and required serial endoscopic washouts or permanent colostomy. Therefore, based on our results in this first reported series of patients who received a SEMs instead of a diverting ostomy for obstructing rectal cancer to deliver neoadjuvant therapy, it is not a recommended practice until further preventative strategies to protect anastomotic integrity are found.

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Conflicts of Interest

The authors declare that there is no conflict of interest.

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