

# Management of Recurrent Large Bowel Obstruction Due to Stent Occlusion by ‘Stent-Over-Stent’: A Case Report and Literature Review

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## Abstract

Endoscopic stenting for malignant large bowel obstruction is common nowadays. However, recurrent obstruction secondary to stent occlusion due to tumour ingrowth or overgrowth might occur. We reported a case of a 70-year-old man with large bowel obstruction initially treated with colonic stenting. It was complicated with recurrent intestinal obstruction, with colonoscopy showing stent blockage by tumour ingrowth over distal part of the stent. Successful endoscopic implantation of additional colonic stent over the old stent was achieved and intestinal obstruction was resolved afterwards.

**Keywords:** Colon, Intestinal Obstruction and Stenting

## 1. Introduction

Surgery was the only option in the past for malignant large bowel obstruction (LBO), which usually presents as surgical emergency. However, emergency surgery per se, and the associated stoma creation, carries high morbidity and mortality [1-4]. On the other hand, endoscopic placement of self-expandable metallic stent (SEMS) is increasingly practised nowadays with low mortality rates [1]. While clinical resolution of intestinal obstruction usually happens within several days of successful placement of SEMS, delayed stent occlusion due to tumour ingrowth or overgrowth had been reported in literatures [1], especially with the use of uncovered stents, leading to recurrent obstruction. Herein we report a case of malignant LBO using covered stent, resulting in recurrent intestinal obstruction due to ingrowth in the distal part, which was successfully managed by endoscopic implantation of additional colonic stent.

## 2. Case Report

A 70-year-old man who was lately diagnosed to have inoperable lung cancer was admitted to the surgical ward for intestinal obstruction. Computed tomography showed a tumour in descending colon with features of LBO; multiple liver metastases were present. In view of dissemi-

nated disease, SEMS was attempted as a palliative measure to relieve the obstruction. Colonoscopy confirmed the presence of an obstructive growth in descending colon, and a 10 cm ComVi enteral covered colonic stent<sup>®</sup> (Taewoong Medical Co., Seoul, Korea) was inserted under both endoscopic and fluoroscopic guidance (**Figure 1** and **Figure 2**). Following this the intestinal obstruction resolved rapidly, with bowel opening on the same day. The patient made an uneventful recovery afterwards, and was discharged 3 days after stent placement.



**Figure 1.** Endoscopic view of the obstructing tumour.



**Figure 2.** Intestinal obstruction resolved after placement of first colonic stent. Arrow points to the stent.



**Figure 3.** Recurrent intestinal obstruction resolved after “stent-over-stent”—implantation of second colonic covered stent (white arrow). Broken arrow indicates the original stent.

Two months later, the patient was readmitted with a picture of recurrent intestinal obstruction which failed to resolve with conservative measure. Colonoscopy was

repeated for suspected stent blockage. On endoscopic examination, tumour ingrowth was found over the distal “uncovered” part of the stent, leading to recurrent obstruction; proximal to this the stent was otherwise patent. An additional 12 cm ComVi enteral covered colonic stent<sup>®</sup> (Taewoong Medical Co., Seoul, Korea) was placed over the distal part of the original stent. Bowel opening resumed immediately after stent placement. Subsequent abdominal x-rays showed resolving intestinal obstruction (**Figure 3**). The patient was discharged after one week’s hospitalisation.

### 3. Discussion

Surgery was the only option in the past for relieving malignant LBO, which usually presents as surgical emergency. However, emergency surgery itself carries a high morbidity and mortality, and curative resection is feasible in only 30% of patients due to extensive tumour [1,2]. In addition, emergency surgical procedures would often end up in stoma creation, which again is associated with high morbidity and mortality [3-4]. Moreover, stoma creation was shown to have a high negative impact on patients’ psychological well-being and quality of life [5,6]. Around 40% - 60% of patients never have their colostomies reversed in the rest of their lives [7,8].

Since first reported by Dohmoto in 1991 [9], SEMS has been employed as a non-invasive means for relieving acute malignant LBO and a bridge to definitive elective surgery in potentially resectable colorectal tumours [10-12]. In palliative settings, SEMS also significantly reduce the chance of stoma creation, length of hospital stay, mortality rate, and medical complications compared with palliative surgery [1,13-15]. Additionally, it allows these patients to enjoy the full benefits of minimally invasive surgery [16]. It is a safe procedure with low mortality rates of approximately 1% [1,17]. Various reviews have reported technical and clinical success rates of 75% - 100% and 84% - 100% respectively [1,10,18,19].

However, SEMS is not without complications. Colonic perforation, stent migration, stent occlusion, and bleeding have been reported [1,10,17]. In particular, stent occlusion is seen in around 10-16% of patients and occurs more frequently in palliative settings [1,6,14,20]. It is a common cause of delayed recurrent obstruction following apparently successful initial SEMS implantation, especially with the use of uncovered stents [10,21]. Prospective studies and systemic reviews showed that the time for colonic reobstruction ranged from 48 hours to 480 days after stent placement [6,13,14,21]. This variation in stent patency duration may be due to difference in demographic factors, underlying malignancies, or types of stents used [6,14].

In theory, uncovered stents are subject to tumour ingrowth and resultant reobstruction. Conversely, covered stents might help reduce the risk of stent occlusion due to tumour ingrowth as the metal mesh could act as a barrier to tumour invasion [6]. The rate of reobstruction by tumour ingrowth in uncovered stents was reported as 12%, which was higher than published rates for covered stents [6,14]. But even for covered stents, there is still a possibility of tumour overgrowth at either end, and, as clearly illustrated by the present case, the risk of tumour ingrowth over the 'uncovered' part of these stents remains. There were reports using laser therapy to ablate this tumour ingrowth [22]; usually multiple sessions are required. More recently, the use of an additional covered stent is preferred by endoscopists [10,21], as was illustrated in the present case.

#### 4. Conclusions

In conclusions, the present report serves as a reminder that this "stent-over-stent" strategy is a viable, non-nvasive one-off option in dealing with stent occlusion due to tumour ingrowth. However, there is a lack of case series or large scale studies this area. Further work has to be carried out to investigate the efficacy of this strategy.

#### 5. References

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