



# Meckel's Diverticulum as Diverting Stoma in Obstructive Colon Cancers

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## Abstract

**Background:** The surgical management of obstructive colon cancers especially those presenting with acute obstruction, is still challenging. Since, the emergent colectomy in cases of unresectable tumors or frozen abdomen, has been reported with high rates of mortality and morbidity. Application of a diverting stoma significantly alleviates the symptoms and prevents further intestinal necrosis and perforation.

**Case presentation:** In this Report a case of unresectable obstructive colon cancer is presented. During the operation, an asymptomatic Meckel's Diverticulum (MD) was found which used to be formed as a diverting ileostomy.

**Conclusion:** We advocate our experience of using incidental MD for constructing a diverting stoma for an obstructive colon cancer.

**Keywords:** Loop ileostomy, Oncosurgery, Stoma, Temporary ileostomy Meckel's diverticulum

## 1. Background

The management of obstructive colon cancers, especially those presenting with acute obstruction, represents a challenge to most surgeons. For years, the major concern towards surgical palliative care has been alleviating the symptoms and improvement of the quality of life. (1, 2)

Since the general condition of the patient in the emergent surgery, are usually unstable –especially when many of these patients are aged and suffering other comorbidities- shortening of the total operative time has a critical role on the final outcome. Based on this, emergent colectomy in obstructive cancers has been reported with high rates of mortality and morbidity.(1) Therefore, applying a temporary diversion stoma is highly suggested, especially in patients who need neo-adjuvant treatment prior to radical tumor resection. Using a diverting stoma – usually loop ileostomy- significantly alleviates the symptoms and prevents further intestinal necrosis and perforation. (1, 2)

Meckel's diverticulum (MD) with the approximate incidence of 2%, is the most prevalent congenital malformation in gastrointestinal tract. In most cases, MD remains asymptomatic and may be incidentally found in the abdominal operations. Although the surgical resection has been widely accepted for symptomatic MD, it controversy remains on the appropriate approach regarding incidental cases. In recent years, studies have demonstrated a shift towards resection especially in high-risk patients.(3-6) Robijn et al. has defined a guideline for assessment of factors which should be taken into account in

incidental diverticula with high risk of further complications.(7)

On a previous attempt, a MD has allegedly been suited to construct a continent urinary conduit with satisfactory results.(8) We describe a case of acute obstructive colon cancer requiring a diverting ostoma, whose incidental MD was used to form a loop ileostomy.

## 2. Case presentation

A 52- year old man who was diagnosed with hepatic flexure colon cancer, presented with partial obstruction at the emergency room. There was no evidence of metastasis in preoperative staging done based on computerized tomography (CT) scan. He underwent emergent surgery and during the operation, it was observed that there is tumoral invasion into duodenum which made the curative resection challenging due to high morbidity and mortality in this step.

Therefore, it was planned to form a diversion ileostomy to alleviate the patient's symptoms and refer to an oncologist for medical therapies. In further assessment, there was a considerable long broad-based Meckel's diverticulum adjacent to the terminal ileum at the 50 cm from ileocecal valve, then it was planned to mature it to be usable as a loop ileostomy. Hence, the Meckel's diverticulum was pulled out through a cut in the abdominal wall, the tip of diverticulum was removed and then its base was stitched to the fascia and skin to form a stoma. (Figure 1, 2)

Two days post-surgery, the patient was



**Figure 1.** A long broad-based Meckel's diverticulum adjacent to the terminal ileum

discharged with good general conditions and functional ileostomy, and was referred to an oncologist. Three months after surgery, in the course of chemotherapy, the patient was visited and the ileostomy had a good appearance and was functional. Depending on response to chemotherapy, the patient might be candidate for ileostomy recanalization and en-bloc tumor resection.



**Figure 2.** A loop diverting ileostomy

### 3. Discussion

The management of unresectable or metastatic colon cancers presenting with acute obstruction or prone to obstruction is challenging. As acute bowel obstruction, often need emergent surgery; the tumor resection with primary anastomosis would be preferable if possible. But, in unresectable tumors, the bowel decompression with a diverting stoma is a better option for palliation.(1, 2)

Previously, studies have reported using MD to construct an appropriate conduit for urinary continent, in two pediatrics cases with neurogenic bladder and one adult case of bladder carcinoma. A recent effort has also been made on using an incidental MD to form a stoma for ileal reservoir. In

all of these cases, diverticula had a considerable lengths and healthy base, with no evidences of inflammation or tumor, to become a favorable alternative for small bowel or urinary bladder (9-12).

In recent years, approach to asymptomatic incidental MD, has been debated. To avoid postoperative probable complications, some authors recommend resecting MDs in few circumstances including male gender, age less than 45, fibrotic band at the base and the length longer than 2cm (7).

In a study published by Cullen et al, the authors believed that due to histological similarity between MD and ileal mucosa, MD can make a good alternative for GI diversion which can relieve concerns towards bowel obstruction, fistula and stenosis (9).

Although bowel obstruction and inflammation in MDs, have been assessed as the most common presentations in adults, asymptomatic MD is commonly diagnosed during the operations performed for different reasons (6).

Previously, protective ileostomy using MD was demonstrated benefits for two cases of rectal cancer underwent the low anterior resection (13,15). Referring to diverticula's vasculature and length and the mucosal folds that qualify it as a tubular structure, it seems to be feasible for long-term catheterization and stoma (9).

In an another attempt by Zani et al, the authors concluded that an incidental MD carries very low rates of mortality and morbidity to be excised and it may be safe to be constructed as an stoma if needed (14).

In this report, we discuss the reasons why the incidental MD could be considered as a good surgical choice for temporary stoma in obstructive colon cancers; MD is usually easy to be mobilized, providing a considerable length for diverting GI materials and minimizing the resected length of small intestine. Care of end stomas is easier than loop ones because of smaller diameter which result in more convenience in using stoma bags and prevention of skin irritation.

To select the right patient, we need to consider multiple factors; the diverticulum should be appropriate in length and diameter to be easily mobilized, with no evidences of inflammation or tumoral invasion. Additionally, the appropriate distance between diverticulum and ileocecal valve should be taken into consideration, to avoid irritating the skin by leakage of intestinal secretion.

We believe that concerns towards diverticulum-related complications will be minimal by fixing the diverticulum and adjacent small intestine to the abdominal wall. Finally, in case of tack downing of ostomy, it should be ensure that the diverticulum is resected.

### 4. Conclusion

We suggested that using an incidental MD to form

a diverting stoma should be taken into account, especially under emergent setting for obstructive malignancies. In case herein, the patient was discharged with a well-functioning ileostomy and in postoperative follow-ups, the stoma remained functional without major complications.

## Footnotes

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