Journal of Endoscopy

Case Report

Palliative Metallic Colonic Stenting without the Use of Fluoroscopy: Utility of an Ultrathin Gastroscope

Choon-Seng Qua[1], Saravanan Kannan[2], Chin-Wee Ang[3] and Syuhadah Sarif[4]*

[1]Department of Gastroenterology, Mahkota Medical Centre, Melaka, Malaysia

[2]Department of Radiology, Mahkota Medical Centre, Melaka, Malaysia

[3]Department of Surgery, Mahkota Medical Centre, Melaka, Malaysia

[4]Endoscopy Unit, Mahkota Medical Centre, Melaka, Malaysia

Abstract

A 59-year-old male presented to our hospital with a 6-month history of abdominal pain and altered bowel habits. Clinically he had a palpably hard liver. An abdominal and pelvis CT scan showed a rectosigmoid tumor with multiple liver metastasis. Sigmoidoscopy showed a large tumor causing almost complete luminal obstruction. Biopsies of the tumor showed moderately differentiated adenocarcinoma. He was initially referred to our oncologist for palliative chemotherapy but in view of impending colonic obstruction, he was advised to first undergo a palliative colonic stenting.

This was initially attempted using the conventional approach with guidewire and fluoroscopic guidance. However, we failed to advance the guidewire beyond the tumor despite repeated attempts. We then used an ultrathin gastroscope to carefully negotiate pass the tumor and advanced the guidewire wire under direct visualization. A 15 cm uncovered Self-Expanding Metallic Stent (SEMS) was deployed without fluoroscopy, using the gastroscope positioned in parallel with the stent as a guide. An abdominal X-ray ordered the next day showed almost complete expansion of the stent. The patient reported significant relief of his bowel openings and was commenced on palliative chemotherapy in the same week.

Keywords: Rectosigmoid cancer; Colonic stenting; Ultrathin gastroscope; Fluoroscopy

Introduction

Colonic obstruction is a common complication of colorectal cancer, leading to significant morbidity and mortality if not managed timely. In the past, surgery (tumor resection or colostomy) remains the mainstay of treatment but in recent years, metallic stentings have been increasingly used as a less invasive and effective alternative, either as a bridge to surgery or palliation of obstruction. The conventional approach involves the use of a guidewire to pass through the obstructed segment of colon followed by deployment of a SEMS under fluoroscopic guidance. However, many studies have shown that colonic stenting can be performed successfully without the use of fluoroscopy. We report a case of colonic stenting without the use of fluoroscopy, relying primarily on an ultrathin gastroscope under direct visualization.

Case Presentation

A 59-year-old male with no significant past medical illness presented to our hospital with a 6-month history of right sided abdominal pain, altered bowel habits with passing of blood and mucus per rectum. Physical examination revealed a palpably enlarged and hard liver. Per rectum examination was normal. An abdominal and pelvis CT scan showed a rectosigmoid tumor measuring approximately 7 cm in size (Figure 1), associated with multiple mesenteric nodes and numerous heterogenous lesions involving both lobes of the liver (Figure 2). A sigmoidoscopy by one of our colleagues showed a large tumor in the rectosigmoid region, almost occluding the entire lumen of the colon (Figure 3). Multiple biopsies were taken which later confirmed it to be moderately differentiated adenocarcinoma.

He was then referred to our oncologist for palliative chemotherapy. However, in view of the likelihood of impending colonic obstruction during the course of chemotherapy which may lead to interruption of this treatment, it was decided that the best treatment would be a colonic stenting (as opposed to surgery, which may delay the initiation of his chemotherapy) following discussions with our colorectal surgeon and oncologist. In our center, such procedure is usually done in the operating theatre with the help of an anesthetist for sedation and using a mobile C-arm fluoroscopy machine to guide deployment of a metallic stent. Fleet enema was given to the patient for bowel cleansing prior to the procedure. We started off using a therapeutic gastroscope and a standard guidewire, after the patient was properly sedated with intravenous midazolam and fentanyl. However, despite repeated attempts, we were unable to pass the guidewire (due to repeated coiling) beyond the tumor at the rectosigmoid region, likely due to its large size and anatomical region.

Citation: Qua CS, Kannan S, Ang CW, Sarif S. Palliative Metallic Colonic Stenting without the Use of Fluoroscopy: Utility of an Ultrathin Gastroscope. Endosc. 2023; 1(1): 1002.

Publisher Name: MedText Publications LLC

Manuscript compiled: Nov 20th, 2023

***Corresponding author:** Choon-Seng Qua, Department of Gastroenterology, Mahkota Medical Centre, Melaka, Malaysia, Tel: 60122110081

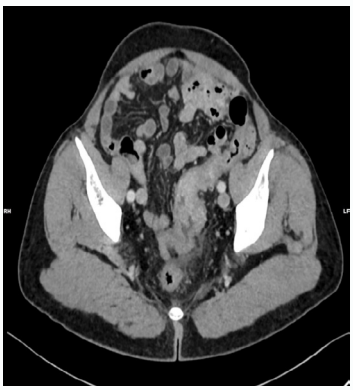

Figure 1: CT scan showing rectosigmoid tumor.

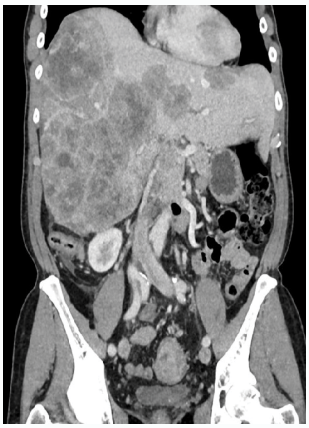

Figure 2: CT scan showing multiple liver metastasis.

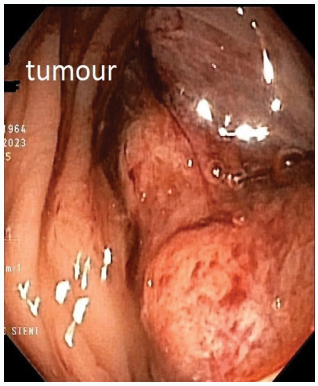

Figure 3: Endoscopic view of large rectosigmoid tumor.

We then used an ultrathin gastroscope (Olympus GIF-XP190N) which has a distal diameter of 5.4 mm to carefully negotiate pass the obstructed segment at the periphery of the tumor. After several attempts, we were able to reach beyond the proximal end of the tumor. The guidewire was then inserted proximally under direct visualization for about 35 cm, ensuring that the passage of guidewire was smooth with minimal resistance. Once the guidewire was in place, the gastroscope was then gradually withdrawn, and the length of the tumor was measured to be approximately 7 cm. After the gastroscope was fully withdrawn, a SEMS was inserted over the guidewire. The gastroscope was reinserted and placed parallel alongside the stent and guidewire, allowing direct visualization of the stent and the distal yellow marker (Figure 4).

To ensure adequate coverage of both ends of the tumor and also taking into consideration the likelihood of stent shortening and migration after deployment, A 15 cm uncovered SEMS (Niti-S, Taewoong Medical, 150 mmx 24 mm) was carefully deployed under direct visualization, without the use of fluoroscopy. The distal yellow marker was kept constant at approximately 3 cm away from the distal margins of the tumor and as the deployment continued, frequent adjustments of the stents (by gradual pulling out) was necessary to ensure this distance was maintained. Immediately after full deployment was achieved, the stent was noted to be in good position. The position of the proximal end of the stent was examined by reinserting the ultrathin gastroscope and found to be completely free of tumor.

The following day, the patient reported no abdominal pain and was able to pass out stools for more than 10 times since the placement of the stent. He underwent an abdominal X-ray which showed almost complete expansion of the stent (Figure 5). He was then referred back to our oncologist to start on palliative chemotherapy (consisting of Capecitabine, Oxaliplatin and Bevacizumab) in the same week.

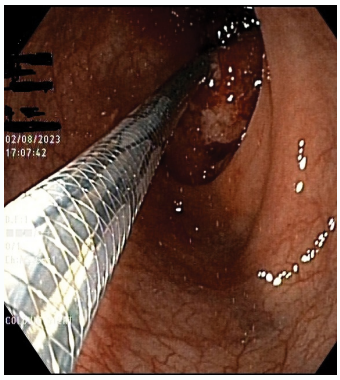

Figure 4: Endoscopic view from ultrathin scope placed parallel to the stent.

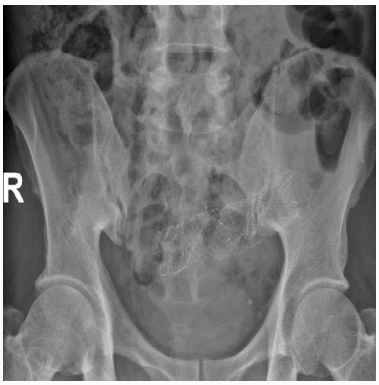

Figure 5: A fully expanded stent after 24 hours.

Discussion

Colorectal Cancer (CRC) remains one of the leading causes of cancer death amongst developed countries, with rising incidence observed in many Asian countries [1]. Malignant colonic obstruction is a common complication amongst patients with CRC, leading to significant morbidity and mortality. Studies have shown that between 8% to 13% of advanced colonic cancer patients developed large bowel obstruction [2,3].

In recent years, the use of SEMS has evolved to be used as a

bridge to surgery for CRC patients with large bowel obstruction, with good clinical results [4,5]. For palliation of malignant colonic obstruction, the European Society of Gastrointestinal Endoscopy (ESGE) recommends colonic stenting as the preferred treatment [6].

Our patient presented with advanced disease upon diagnosis whereby curative treatment is not possible at this stage, mainly due to multiple unresectable liver metastasis. Following discussions with our oncologist and colorectal surgeon, it was deemed that palliative chemotherapy would be the most appropriate treatment. This has to be carried soon due to the presence of large metastatic lesions causing right sided abdominal pain, in addition to the risk of impending colonic obstruction as the patient reported passing smaller and smaller amounts of stools with time. The inability to advance the scope pass the tumour during the first sigmoidoscopy has been recognised as an independent risk factor for the development of bowel obstruction [7,8], which may result in interruption of his chemotherapy. Following a thorough discussion and counselling about the various options and their associated risks and benefits, the patient agreed to undergo palliative colonic stenting.

Traditionally, colonic stenting is done with the aid of fluoroscopy, however several studies have shown that it can be done without the use of fluoroscopy, relying on direct visualization using the endoscope, with high technical success rates and similar clinical outcomes compared to stenting using fluoroscopy [9]. This can be achieved either using a through-the-scope method or placing the endoscope in parallel with the guidewire and stent (over-the-wire). One major advantage of stenting without fluoroscopy is the reduced risk of exposure of the endoscopist and supporting staff to the effect of radiation, which has been shown be to be associated with increased cancer risks later in life [10,11]. In addition, this method could reduce overall costs and would be ideal in resource limited centers without ready access to fluoroscopy. In our patient, we used an ultrathin gastroscope for direct visualization to guide deployment of the stent as the lesion was not far from the anal verge. Alternatively, a through-the-scope method of stenting using a therapeutic gastroscope for direct visualization could be used. This has the advantage of better control and stability compared to the ultrathin gastroscope.

The ultrathin gastroscope (transnasal gastroscope) was first developed by otolaryngologists in the 1990s but was later adopted by gastroenterologists in their daily clinical practice. It was primarily meant for diagnostic gastroduodenoscopy without sedation, which can be performed in any outpatient clinic with minimal post procedure monitoring as no sedation was given and the patients usually tolerated the procedure well. This has the advantages of lowering the cost of upper endoscopy and complications related to conscious sedation [12]. It can be performed via transnasal route or peroral route, depending on the preference and expertise of the endoscopist. The only limitation of this device is the lack of therapeutic potential due to its small working channel (2.2 mm) and low suction capability. In our center, we commonly used it for patients who requested for unsedated gastroscopy or for diagnostic purposes amongst frail patients where sedation is considered to pose a significant risk of cardio-respiratory depression. The other uses of this device are esophageal stenting (without fluoroscopy) similar to the current case and wire-guided placement of nasogastric feeding tubes in cases of failed manual nasogastric feeding tube insertion.

One unique advantage of this device as illustrated in our current case is the fact that it allowed passage beyond a tight segment of stricture or tumor which allows more accurate measurement of the length of stricture or tumor, in addition to detection of any other pathology either proximal (colon) or distal (esophagus) to the obstruction, which is sometimes not possible with a standard scope. It can also be used immediately after deployment of the stent to ensure that the proximal or distal extent of the stent is tumor free, indicating ideal stent position. The only limitation of this device for use in colonic stenting is the fact that it is only useful for left sided colonic obstruction (rectosigmoid to descending colon) due to its limited working length (1100 mm).

In conclusion, we feel that colonic stenting should be performed without fluoroscopy, if possible, after careful evaluation and selection of appropriate patients. This has a major advantage of reducing unnecessary risk of radiation exposure to the endoscopist and supporting staff, in addition to reduced costs, especially in resource scarce settings. In cases whereby standard scopes and guidewires cannot advance beyond a narrowed segment in the distal colon, an ultrathin gastroscope can be used to overcome this hurdle, allowing better assessment of tumor length, proximal tumor margins and guide deployment of SEMS without fluoroscopy.

References

1. Chung RY, Tsoi KKF, Kyaw MH, Lui AR, Lai FTT, Sung JJ. A population-based age-period-cohort study of colorectal cancer incidence comparing Asia against the West. Cancer Epidemiol. 2019;59:29-36.
2. Winner M, Mooney SJ, Hershman DL, Feingold DL, Allendorf JD, Wright JD, et al. Incidence and predictors of bowel obstruction in elderly patients with stage IV colon cancer: a population-based cohort study. JAMA Surg. 2013;148(8):715-22.
3. Jullumstro E, Wibe A, Lydersen S, Edna TH. Colon cancer incidence, presentation, treatment and outcomes over 25 years. Colorectal Dis. 2011;13(5):512-8.
4. Ho KM, Chan KM, Kwok SY, Lau PY. Colonic self-expanding metal stent (SEMS) as a bridge to surgery in left-sided malignant colonic obstruction: an 8-year review. Surg Endosc. 2017;31(5):2255-62.
5. Kim SH, Jang SH, Jeon HJ, Choi HS, Kim ES, Keum B, et al. Colonic stenting as a bridge to surgery for obstructive colon cancer: is it safe in the long term? Surg Endosc. 2022;36(6):4392-400.
6. Hooft JE, Veld JV, Arnold D, Beets-Tan RGH, Everett S, Gotz M, et al. Self-expandable metal stents for obstructing colonic and extracolonic cancer: European Society of Gastrointestinal Endoscopy (ESGE) Guideline - Update 2020. Endoscopy. 2020;52(5):389-407.
7. Kim DH, Kim B, Choi JH, Park SJ, Hong SP, Cheon JH, et al. Tumor characteristics associated with malignant large bowel obstruction in stage IV colorectal cancer patients undergoing chemotherapy. Int J Colorectal Dis. 2016;31(11):1767-74.
8. Matsumoto T, Hasegawa S, Matsumoto S, Horimatsu T, Okoshi K, Yamada M, et al. Overcoming the challenges of primary tumor management in patients with metastatic colorectal cancer unresectable for cure and an asymptomatic primary tumor. Dis Colon Rectum. 2014;57(6):679-86.
9. Connelly TM, Ryan J, Foley NM, Earley H, Sahebally SM, O'Brien C, et al. Outcomes After Colonic Self-Expanding Metal Stent Insertion Without Fluoroscopy: A Surgeon-Led 10-Year Experience. J Surg Res. 2023;281:275-81.
10. Robatjai M, Dareyni A, Baghani HR, Hosseinzade M, Akbarzadeh R, Mehrpoyan M. Investigation of radiation dose around C-arm fluoroscopy and relevant cancer risk to operating room staff. Radiat Environ Biophys. 2022;61(2):301-7.
11. Stahl CM, Meisinger QC, Andre MP, Kinney TB, Newton IG. Radiation Risk to the Fluoroscopy Operator and Staff. AJR Am J Roentgenol. 2016;207(4):737-44.
12. Dean R, Dua K, Massey B, Berger W, Hogan EJ, Shaker R. A comparative study of unsedated transnasal esophagogastroduodenoscopy and conventional EGD. Gastrointest Endosc. 1996;44(4):422-4.