Chapter 15
Management of Large Sessile Cecal Polyps

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Overview/Introduction

The subject matter of this chapter are large sessile adenomas of the cecum. The audience is presumed to be general or colorectal surgeons who regularly perform colonoscopy. This chapter is intended for a Western audience. It is important to note that the literature referenced in this chapter pertains to large bowel adenomas and is not necessarily specific to cecal lesions.

It is important to realize from the outset that there is presently a huge gulf between the Far East and the Western Hemisphere regarding the treatment of large sessile polyps. The high incidence of gastric cancer in Japan led to aggressive screening programs that were applied nationwide in an effort to detect premalignant lesions and cancers at an early stage. The technique of Endoscopic Mucosal Resection (EMR), now a piecemeal resection method, was initially used to obtain large gastric biopsies. Endoscopic Submucosal Dissection (ESD), which allows en bloc excision of mucosal lesions with normal tissue margins after submucosal injections to 'lift' the lesion off of the muscularis propria, was next developed for the management of early gastric cancer [1]. After learning and mastering these methods in the thick walled stomach a subset of Japanese endoscopists ventured into the large bowel more than a decade ago. Presently, large sessile polyps in all parts of the colon are routinely removed via ESD methods in Japan and other countries in the Far East with completion rates ranging from 80 to 91.5 %, a bleeding rate between 0 and 1.5 %, and perforation rates of 1.4–10.4 % [2–8].

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It should be noted that there are experts who believe that EMR (and not ESD) is the preferred method for removal of large sessile polyps outside the operating room setting [9–11]. Certainly, EMR is, by far, the more commonly used polypectomy method world wide. A clear disadvantage of EMR is that piecemeal resection makes it impossible to confirm complete resection via pathologic analysis.

It is also important to understand that there is also a large gap between the Far East and West as regards the ability to accurately distinguish between adenomas, advanced dysplastic lesions, and superficial cancers based on a lesion's surface appearance in the absence of tissue biopsies. Currently used methods include chromoendoscopy (use of surface dyes to reveal polyp surface anatomy and pit patterns), narrow band imaging, and magnification (via endoscope up to 150 X). A separate endoscopic examination may be performed wherein some or all of the above methods are applied to a large polyp and many photos obtained; in many centers this data is reviewed by experts at a polyp staging conference [akin to a tumor board] at which time a consensus diagnosis is made. The ability of these methods to distinguish between adenomas with varying degrees of dysplasia, SM-1 cancer, and SM-2 cancer has been verified in numerous large case series [12–16]. The end result is that in Japan far fewer colectomies are done for large benign sessile colorectal adenomas and noninvasive highly dysplastic lesions.

At present, a relatively small subset of Western gastroenterologists, are learning and employing these techniques in a limited number of centers. In an effort to avoid colectomy and its attendant morbidity and mortality, several combined surgical and endoscopic polyp removal methods have also been developed and utilized [17–19]. Nonetheless, the vast majority of large sessile lesions in the U.S. are still treated via segmental colectomy, most often a standard oncologic resection. An assumption of this chapter is that, where safe and feasible, avoidance of colectomy is desirable.

It should also be noted that the endoscopic and combined endoscopic/laparoscopic skill sets and experience of surgeons varies greatly in the U.S. and that we are on the threshold of substantial changes in this arena. This reality makes general recommendations applicable to all settings impossible. Each surgeon must look within their medical/surgical community and, perhaps, refer patients to interventionalists familiar with advanced polypectomy methods or combined laparoscopic/endoscopic methods. Alternately, having made the commitment to learn one or more of these newer methods, appropriate training and skills acquisition must take place prior to embarking on the employment of these techniques. The learning process is facilitated by identifying an interested and experienced surgical colleague who is willing to participate in these cases. The consent process must be honest and fully explain the potential benefits and complications of the new methods. When performed by surgeons, in the authors' opinion, these procedures are best carried out in the operating room. Also, it is advised that a broad consent be obtained that gives permission for either endoscopic or laparoscopic surgical removal of the polyp, via wedge resection or standard colectomy. In the authors institution, these cases are covered by an Institutional Review Board (IRB) approved protocol and an IRB consent is obtained prior to surgery [19].

Treatment Options

Polyp treatment options include: (1) EMR (standard piecemeal snare polypectomy with/without saline lift), (2) ESD polypectomy, (3) laparoscopic-facilitated colonoscopic piecemeal polypectomy, (4) "wedge" partial circumference cecectomy, (5) standard segmental bowel resection. As mentioned, although ESD experts perform the procedure in the endoscopy suite, presently, in the U.S., the small number of surgical endoscopists performing ESD or EMR for the large and most challenging polyps do so in the operating room usually under general anesthesia. In this way, after the ESD is completed, a laparoscopy can be performed to inspect the bowel for perforations or weaknesses which, if found, can be closed with seromuscular sutures. Alternately, if the ESD/EMR attempt fails, then the polyp can be removed surgically (wedge or segmental resection). Of note, it is mandatory that CO2 gas be used for endoscopic insufflation of the large bowel when ESD or EMR is performed in conjunction with laparoscopy in order to avoid bowel distension and loss of the operative field.

A brief discussion of these methods follows:

EMR and Laparoscopic Inspection

It is strongly advised that a submucosal lift be established prior to snare polypectomy EMR. The lift makes full thickness perforation less likely by increasing the distance between the muscularis propria and the lesion. Also, failure of a part of the lesion to lift alerts the endoscopist to the possibility that a cancer may be present and invading into the deep muscular layer (vs. scarring from a prior removal attempt). It is important that a concerted effort be made to fully remove the polyp during the first attempt since subsequent efforts will be more difficult and associated with a higher perforation risk due to scarring between the mucosa and muscularis propria. As regards bleeding, rates between 3.1 and 11.3 % have been reported in EMR series [20–22]. After successful completion of the EMR, a laparoscopy may be performed to evaluate the bowel wall integrity and repair or to reinforce the bowel wall if needed. In failed cases a laparoscopic bowel resection can be carried out.

ESD and Laparoscopic Inspection

The following tools are necessary for ESD: lifting solution, sclerotherapy catheter, needle knife (variety available), dissection cap (fits on scope tip and facilitates submucosal dissection), polypectomy snare (specialty snares available), and, importantly, a high frequency electrosurgical current generator (HFEC, that

provides pulsed, adjustable currents). A More detailed description of the method can be found elsewhere. Briefly, the patient is positioned so that the lesion is "up". After injection of the lifting solution (usually with methylene blue added) the resection margin is superficially marked with the knife (HFEC soft coagulation setting) after which the mucosa is fully scored for about 25–35 % of the circumference. Next the cut mucosal edge is undermined with the knife creating a submucosal pocket into which the scope tip (with dissection cap affixed) is inserted; the submucosal dissection is then continued beneath the lesion. As needed, the circumference of the specimen is completely scored. Gravity assists by retracting the partly detached polyp. A snare may be used to complete the resection. Clips may be used to close to the mucosal defect. As for EMR, laparoscopic inspection and repair of the bowel wall (vs wedge or ileocolectomy if major injury is found) may be performed after ESD completion.

Laparoscopic-Facilitated Colonoscopic Polypectomy Method

Milsom, Franklin, and Lee have championed this method carried out in the operating room wherein a piecemeal colonoscopic EMR is carried out after submucosal lift with the help of simultaneous extrinsic manipulation of the polyp and colon segment via laparoscopic instruments. After polypectomy the bowel wall is inspected (after submersion under water) via laparoscope and endoscope. Full thickness injuries and smaller perforations are repaired laparscopically with seromuscular sutures. The specimens are removed transanally. If necessary, a laparoscopic segmental colectomy can be performed. This method requires an experienced laparoscopist in addition to an expert endoscopist. The laparoscopic bowel manipulation is challenging and more dangerous than usual because the colon (and possibly the small bowel) is fully insufflated which notably decreases the operative working space [17–19].

Laparoscopic "Wedge" Partial Circumference Full Thickness Resection

This method is an option for well placed cecal lesions. A laparoscopic linear GIA type stapler is used to resect a portion of the cecum containing the polyp (identified via tattooing and simultaneous colonoscopy). It is critical that the ileocecal (IC) valve be protected and that the polyp be fully removed. The authors recommend that the stapler be applied only after the colonoscope has been inserted into the terminal ileum (protects the valve and TI). After closing the stapler, the colonoscope is withdrawn into the right colon and the stapler's position assessed. After resection, the cecal specimen must be removed from the abdomen and then opened and inspected.

If the margin is in question, frozen sections should be obtained. If a clean margin is not obtained then either more cecum need be removed or an ileocectomy performed. Practically, it is very difficult to wedge resect polyps that lie between the appendiceal orifice and the IC valve because either the IC valve may need to be partially resected or the polypectomy is incomplete [17, 19].

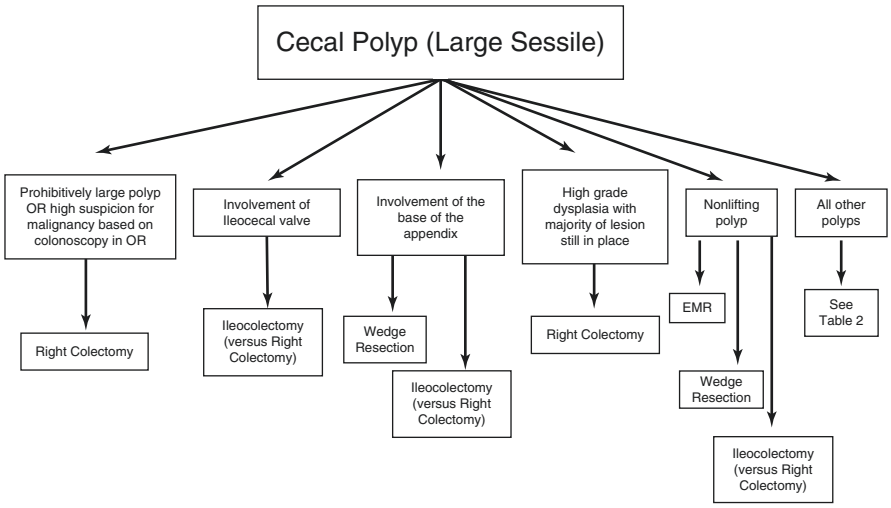
Standard Segmental Bowel Resection

Performed laparoscopically, when necessary. The main question here is whether to do a limited ileocectomy (as for Crohn's disease) vs a standard oncologic right hemicolectomy. It is the author's preference to do a right hemicolectomy because of the risk that an invasive cancer will be found on final pathology.

Treatment Algorithm

It is also not possible to provide a simple algorithm for the treatment of sessile cecal polyps because specific characteristics of the polyp (size, degree of dysplasia, failure to lift, etc.) and the specific location of the polyp (involvement of ileocecal valve or appendiceal orifice) may dictate treatment. Table 15.1 provides the treatment option(s) for each of these situations.

Table 15.1 Treatment algorithm for large sessile cecal polyps



Polyp Characteristics

Very large size is a relative contraindication for endoscopic removal (the skill set of the endoscopist is also a factor); polyps that involve the great majority of the cecum are best dealt with via bowel resection.

Regarding large sessile polyps for which prior biopsies show high grade dysplasia and where the majority of the polyp remains in place; the two largest series suggest that there is a 30–41% chance of there being invasive cancer on final pathology [23, 24]. Given the present inability of the vast majority of Western endoscopists to make the distinction between a highly dysplastic polyp and a cancer based on the surface appearance or other means, the authors recommend a standard oncologic right colectomy for patients with large sessile adenomas with high grade dysplasia.

Polyps that do not fully "lift" with submucosal injection also pose a problem. Failure to lift may signify either the presence of cancer invading into the muscularis propria or a scar that is the residua of prior polypectomy attempts. The treatment options in this situation are: EMR via snare, wedge partial circumference full thickness resection, or ileocolectomy (vs right hemicolectomy).

Location

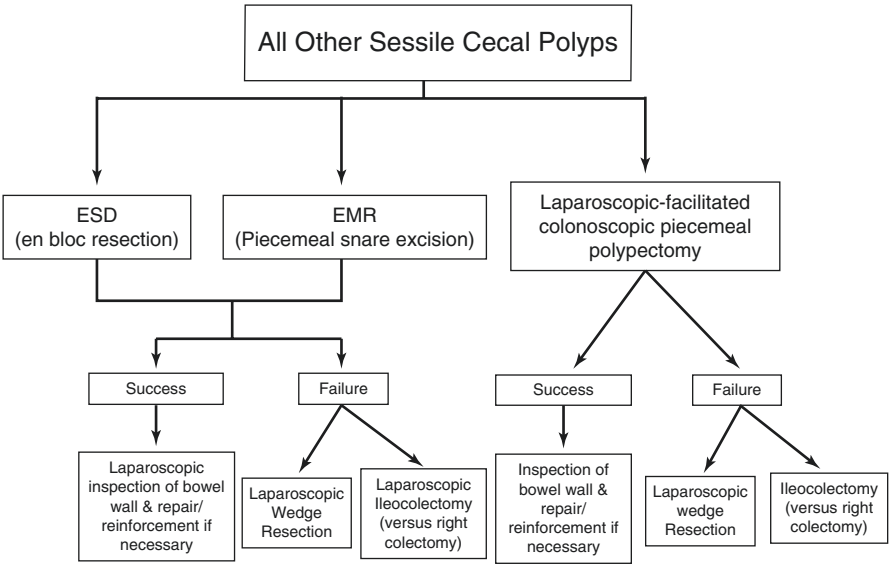
ESD and complete EMR are not options for lesions involving the ileocecal valve or appendix base since the inner polyp edge and margin may not be visible or accessible. The appropriate treatment for the former is an ileocolic bowel resection (vs right colectomy) whereas for the latter a wedge resection may be possible vs. an ileocolectomy.

Algorithm (for Polyps That Do Not Fall into the Above Categories) (Table 15.2)

As stated, an assumption has been made that surgical endoscopists would perform these advanced colonoscopic procedures in the operating room in conjunction with laparoscopy. Since there are multiple advanced colonoscopic methods that can be used and because the preference and experience of each surgeon will largely determine the method chosen, the algorithm includes all 3 methods.

The ESD and EMR methods are listed side by side in the table since the algorithm for each is the same. After successful polypectomy, laparoscopy is done to interrogate the bowel for perforations and to repair the bowel wall with seromuscular sutures, if necessary. If the polypectomy is not successful, a wedge resection would be carried out, if feasible. Laparoscopic-assisted colectomy is reserved for

Table 15.2 Treatment algorithm for large cecal polyps amenable to combined endoscopic/laparoscopic treatment



failed polypectomy patients for whom wedge resection is not an option or if the bowel has been injured beyond repair during endoscopic polyp removal.

Proponents of the laparoscopic-facilitated colonoscopic method (Milsom, Franklin) would follow the right most track on Table 15.2; in these cases, the laparoscopy would be done simultaneously so that the polyp can be presented to endoscopist during the polypectomy. After successful colonoscopic polypectomy the bowel wall is inspected and laparoscopically repaired if need be. A laparoscopic wedge resection or ileocolectomy is reserved for patients in whom the colonoscopic removal attempt fails.

Conclusion

It is appropriate to utilize advanced colonoscopic methods to remove large benign polyps in order to avoid colectomy and its attendant morbidity. Numerous methods are available, however, in the authors opinion, ESD is the current gold standard. Since ESD has not yet been widely embraced by gastroenterologists in the U.S., the combined colonoscopic and laparoscopic methods discussed in this chapter have been devised and employed by surgeons in the West. Use of these methods holds the promise of organ preservation in patients in whom the current alternative is a segmental colectomy. Having said this, it is likely that in a decade or so these lesions will be excised endoscopically in the endoscopy suite without the need for concomitant laparoscopy.

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