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Endoscopic mucosal resection in the colon: A practical guide

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Endoscopic mucosal resection (EMR) is an important therapy for large sessile lesions and advanced mucosal neoplasia of the colon. Careful pre-resection assessment against established classification systems including Paris and lesion granularity is mandatory to formulate a treatment plan, predict technical success and stratify for the risk of invasive disease. Lesions at high risk for invasive disease are best removed en bloc and this finding may dictate a change in the therapeutic strategy. Meticulous technique is crucial to maximise procedural success. This chapter will provide a comprehensive step by step approach to colonic EMR including equipment selection, lesion assessment, endoscopic technique, post procedural care and early detection and management of complications.

Colonoscopic polypectomy is a fundamental tool in the prevention and treatment of colorectal cancer. Colonoscopic polypectomy reduces the anticipated incidence of colorectal malignancy in patients with significant adenomas by approximately 80% in long-term follow up.[1-3] Between 80% and 90% of adenomatous lesions are ≤10 mm size and conventional snare polypectomy has been the accepted treatment for more than 3 decades. Such lesions do not pose a significant challenge to an appropriately trained and skilled colonoscopist.[4] However, the assessment and treatment of larger lesions greater than 20 mm in maximum dimension is an evolving field of knowledge.

Most patients with large sessile or difficult polyps enrolled on an intention to treat (ITT) basis can be safely and effectively treated endoscopically.[5] A small percentage will be subsequently found to have invasive cancer or technically unresectable lesions and require surgical review, but ultimately more than 90% of patients will avoid surgery with substantial clinical gains and major cost savings of approximately 6 hospital days and US$7000 per patient treated.[5] In the past these patients were simply referred for surgery; anecdotally, in 2010 this probably remains a commonly used treatment, particularly in the West.[6-8] However, colonic surgery may be associated with significant morbidity and potential mortality, especially among patients of advanced age or significant comorbidity.[9-11]

Endoscopic mucosal resection (EMR) was first described by Deyhle[12] in 1973 as an endoscopic technique for resecting sessile colonic polyps. The technique involves injecting a liquid solution (usually normal saline) into the submucosal layer of the colon wall. This injection expands the submucosal space and elevates the polyp, providing a safety cushion, a heat sink, and an expanded plane of resection, allowing safe snare excision of the lesion. Because the technique involves deliberate excision of the superficial submucosa in addition to the mucosa, some believe that EMR is a misnomer and the term endoscopic resection (ER) should be used instead.

Lesion assessment and indications

EMR is indicated for sessile colonic lesions >10 mm in maximum dimension that are being considered for endoscopic treatment. Smaller or pedunculated lesions can generally be safely removed with a conventional snare technique. All sessile lesions should be carefully characterized and assessed for the risk of submucosal invasion (SMI) before excision. If a significant risk for SMI exists, then this may suggest a change in the endoscopic treatment strategy

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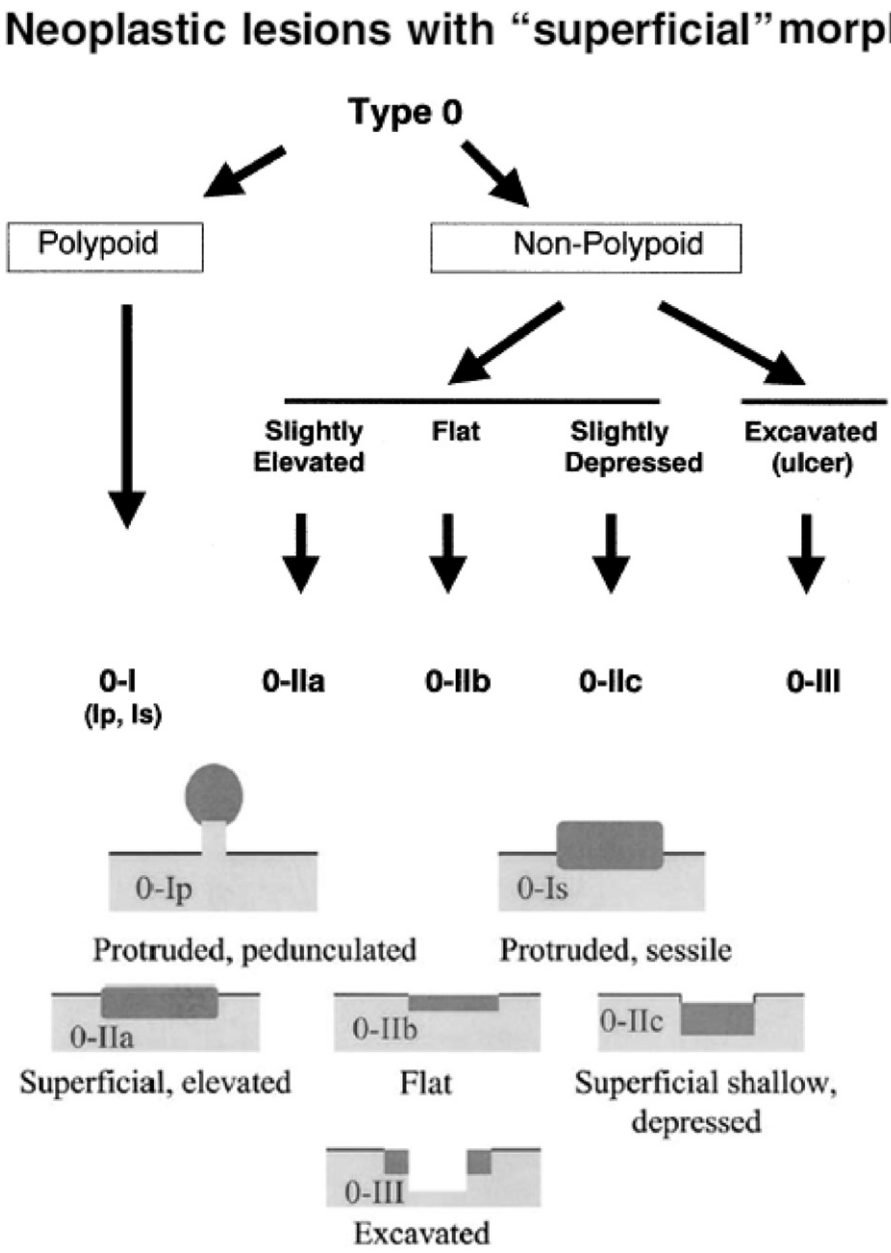

Figure 1 Paris classification.

or the need for surgery. En bloc resection is preferable if the risk for SMI is substantial.

Large sessile or flat lesions of the colon are best described according to the Paris system of endoscopic classification of superficial neoplastic lesions[13,14] (Figure 1). Application of an accepted classification system has many potential advantages, including standardization of morphology descriptions and improved lesion categorization. By improving lesion categorization, a better understanding of the variations in lesion characteristics and biology is achieved and lesion-specific treatment and surveillance algorithms can be developed.[15] Within the Paris system, polypoid lesions may be pedunculated (0-Ip), sessile (0-Is), or with a mixed pattern (0-Isp). Non-polypoid lesions are either slightly elevated, termed 0-IIa (elevation <2.5 mm above the level of the mucosa), or uncommonly completely flat (0-IIb) or slightly depressed (0-IIc). In addition, 0-IIa and 0-IIb lesions ≥ 10 mm in diameter with a low vertical axis but extending laterally along the interior luminal wall are termed laterally spreading tumors (LSTs). LSTs may be either adenomas or serrated lesions. Adenomatous LSTs are further subclassified according to their surface morphology as either granular (G) or smooth nongranular (NG; Figures 2 and 3). This classification system has important implications for the risk of SMI.[16,17] Currently Western endoscopists tend to group 0-Is, 0-Isp, and 0-IIa lesions together, which are then simply described as "sessile."