

Overview of Malignant Colorectal Polyps, Surgical Management

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Abstract: This review will discuss the important features of malignant polyps, emphasize one of the most important clinical issues in colonic adenomas is the diagnosis of malignancy and reporting its different aspects by the pathologist. As well we will discuss effective strategies for their overall management and surgical treatment. A literature search was conducted using electronic databases such as MEDLINE, the Cochrane Library, and manuscript references for studies published in English up to December, 2017 on the malignant colorectal polyps with discussion its surgical management options. Medical diagnosis of malignant colon polyp requires the presence of tumor cells that are penetrating beyond the muscular mucosa right into submucosa (pT1). As well as developing a medical diagnosis of malignant polyp, it is extremely important to report the size of the invasive part, the existence or absence of lymphovascular invasion, the degree of tumor differentiation and the distance of the carcinoma from the line of resection.

1. INTRODUCTION

Adenomatous polyps are non-invasive tumors of epithelial cells developing from the mucosa with the prospective to come to be malignant. The adenoma-carcinoma series is well known and it is approved that greater than 95% of colon adenocarcinomas arise from adenoma [1]. The World Health Organisation (WHO) classifies adenomas into tubular (<20% villous architecture), tubulovillous and villous (80% villous architecture), with approximately 87% of adenomas being tubular, 8% tubulovillous and 5% villous [2].

The term 'malignant polyp' refers to an adenoma that shows up benign macroscopically however where there is intrusion via the muscularis mucosae into the submucosa. Such an emphasis of cancer is discovered on histological assessment. A malignant polyp is for that reason an early carcinoma. It makes up 0.75-5.6% [3], [4] of large-bowel polyps gotten rid of in general diagnostic colonoscopy method. The broad discrepancy is clarified by differences in the study populations, being low where all polyps eliminated are histologically assessed and higher in series that only include larger polyps. In the Nottingham Bowel Cancer Screening Trial, 1466 patients underwent colonoscopy as a result of a positive faecal occult blood-test result. Of these, 710 (48%) were discovered to have an adenoma and a further 73 (5%) had an adenoma containing an emphasis of cancer [5]. A comparable occurrence of deadly polyps has been found in the National Bowel Cancer Screening Programme. Of the initial 1-million people screened, just over 17 000 had a positive faecal occult blood-test result. Of these, 1574 (9%) had cancer of which 155 (10%) were malignant polyps [6]. In recent years, better use of diagnostic colonoscopy has been come with by a rise in the variety of malignant polyps eliminated endoscopically [7].

The management of a malignant polyp following endoscopic elimination is difficult due to the fact that the possibility of recurring malignant cells within the bowel wall or positive local lymph nodes differs from patient to patient, depending upon a number of prognostic factors. The evidence base for management of these lesions is poor and is primarily based on data from symptomatic patients [8], [9]. Suggesting patients on the course of action after removal is difficult. It includes surveillance only, where the risk of recurring disease is considered to be reduced, or significant surgical resection for those with a higher risk. Nevertheless, the level of threat is typically difficult to calculate. In addition, the existence of comorbidity and the site of the lesion need to likewise be taken into consideration when talking about additional management with the patient.

This review will discuss the important features of malignant polyps, emphasize one of the most important clinical issues in colonic adenomas is the diagnosis of malignancy and reporting its different aspects by the pathologist. As well we will discuss effective strategies for their overall management and surgical treatment.

2. METHODOLOGY

A literature search was conducted using electronic databases such as MEDLINE, the Cochrane Library, and manuscript references for studies published in English up to December, 2017 on the malignant colorectal polyps with discussion its surgical management options. Studies included in this review were limited to human subjects with English language. references of relevant included studies were scanned for more related studies to our concerned topic.

3. DISCUSSION

• Epidemiology

The prevalence of malignant polyps in series of endoscopically eliminated polyps is in between 0.2% and 11% [10]. Presently, evaluating programs allow the discovery and treatment of a variety of adenomas and malignant polyps, and this contributes to a decrease of the mortality by colorectal cancer (CRC) [11]. In an asymptomatic population of individuals over 50 years old who underwent direct colonoscopy, there was a 0.8% occurrence of adenocarcinoma of which 50% were cancer "in situ" or in phase I [12]. During screening programs, adenocarcinomas have been found between 3% -4.6% of those who go through colonoscopy following a positive immunological faecal occult blood examination result [13].



Figure 1. Polyp in colon.

• Diagnosis

With the methods of polypectomy, there is a good chance to excise the polyp totally as opposed to in a piecemeal fashion [14]. This likewise helps with a more accurate histological assessment. The polyp could have had a benign appearance at endoscopy, yet after pathology assessment, it might be found to have an invasive emphasis of adenocarcinoma. In addition, patient assessment is much more challenging if the polypectomy site has not been noted (typically by an India ink tattoo) throughout the preliminary endoscopy. In this circumstance, risk analysis of the possibility of residual or recurrent illness and lymph-node metastasis requires stabilizing the threat of recurrent illness against the patient's operative danger for more surgery. This evaluation could be difficult and needs a multidisciplinary approach [15].

Based upon the pathologist's report, the clinician would certainly make a choice on whether polypectomy alone is an adequate therapy or whether the patient needs to undertake a succeeding clear-cut surgical resection [17]. For that reason, after the primary polypectomy, the pathologists' duty is to diagnose the situation precisely, while producing a complete and useful report that enables an assessment of the dangers for the existence or advancement of recurring and metastatic disease [16].

Diagnosis of a malignant colon polyp: High grade dysplasia is defined as the presence of nuclear stratification and/or cytologic features of cancer such as uneven branching, budding, and cribriform appearance of the crypts, loss of cytoplasmic mucin, nuclear hyperchromasia and vesicular nuclei with nucleoli. There is no involved desmoplastic stromal response [18]. For the diagnosis of a malignant polyp, necessarily, the primary action is determining tumor cells with those characteristics listed below the muscularis mucosae and prolonging right into the submucosa. This kind of adenoma need to be reported as a malignant polyp (pT1) [17]. According to the World Health Organization (WHO) suggestion, the term high-grade dysplasia should be used rather than "intramucosal carcinoma" for adenomas where there is mucosal invasion (i.e. invasion of lamina propria \pm muscularis mucosae), yet without extension below the muscularis mucosae. The reason for this classification is that mucosal invasion alone (i.e. without submucosal invasion) is connected with a minimal danger of malignancy (lymph node spread). This is an outcome of the lymphatic drainage of the colon where, no lymphatic channels lie surface to the muscularis mucosae. Consequently, focal cancer that has not attacked with the muscularis mucosae presents no danger of lymph node spread. Normally, lymphatic channels are found in the superficial submucosa and within the muscularis mucosa, yet with only uncommon extensions into the lamina propria (mucosa) and are limited to the base of the crypts. This near-absence of lymphatics within the mucosa is the reason for the observed lack of malignant potential (lymph node metastasis) in polyps showing only high-grade dysplasia (previously called intramucosal carcinoma). For that reason, the bulk of these lesions do not need further surgery [19]. In "cadysplasia" it is recommended to insert a comment to clarify the searchings for and their significance [19].ses where there is mucosal invasion, besides making use of the term "high-grade.

Molecular biomarkers in malignant colon polyps: Colorectal tumors are a heterogeneous group of conditions that occur and advance via the stepwise accumulation of differing sets of genetic and epigenetic changes [20]. Current advances in molecular biomarkers to personalize treatment added to major progress in the therapy and prognosis of the disease, and a lot of them are currently part of routine laboratory examinations [21]. There are just a few researches concerning adding immunohistochemical biomarkers of colon cancers cells in malignant polyps, however, in accordance with some records, concerning 46.8% displayed KRAS mutation, 6.5% BRAF mutations and 10.6% were MSI-H. Most of the gastrointestinal pathology centers dealing with colorectal polyps are currently regularly doing these examinations by immunohistochemical methods (Testing for MSI-H by immunostains for MLH-1, MSH-2, PMS-6 and MSH-6) [22], [23].

- **Management**

Although the medical diagnosis of intrusive adenocarcinoma in polyps is eventually based upon histological exam, the total clinical management of malignant polyps should start with their first evaluation at the time of index endoscopy-based on the size and morphology. Those suspicious for submucosal intrusion or not deemed amenable for endoscopic removal needs to be referred for definitive surgical resection. It is essential that the polyp site be noted to help with identification at the time of surgery.

Larger, sessile polyps should be referred to advanced endoscopists for consideration for EMR or ESD with the best goal of full, intact resection for histological assessment. Endoscopic mucosal resection was developed for elimination of sessile polyps confined to the mucosa and submucosa and is usually utilized for complete excision of lesions as much as 2 centimeters. There are a number of techniques for EMR that have been defined consisting of cap-, and ligation-assisted EMR; however, injection-assisted EMR is most typically employed. This usually includes a preliminary submucosal injection of saline, or various other ideal injectates, which elevates the determined lesion and facilitates its removal from the much deeper layers with an electrocautery entrapment [25], [26]. The inability to raise a polyp with submucosal injection declares the possibility for deeper invasion by malignancy, and shows viability for endoscopic management. Endoscopic submucosal breakdown is generally employed for larger GI lesions however has not been widely taken on for innovative colorectal polyps. The same as EMR, ESD initially entails the saline lift of the polyp; however, this is complied with by a mucosal incision and submucosal dissection with specialized endoscopic electrosurgical knives [25], [27]. These techniques are extra practically difficult and are related to slightly higher risk of significant complications (blood loss and perforation). Once again it is paramount that the polypectomy site be marked endoscopically to ensure that the area could be reassessed for surveillance or can be recognized if surgery is required.

Based on the aforementioned prognostic attributes, the management of malignant polyps that have been previously excised relies on the risk of recurring condition in the colon wall surface, the threat of lymph node transition, and the patient's general medical condition (Figure 2). High-risk polyps are characterized by poor differentiation, the presence of

lymphovascular invasion, deep submucosal intrusion (> 1 mm), margin < 1 mm, and piecemeal resection (inability to entirely evaluate the resected margin). These patients should be referred for definitive oncologic segmental resection, if medically suited for surgery [28]. Colectomy can be carried out in the standard open technique or with a laparoscopic approach. Laparoscopy offers the benefits of less postoperative pain, quicker recovery of bowel function postoperatively, shorter hospital stays, improved cosmesis, and earlier return to regular activities without compromising oncologic results [28]. Low-risk polyps are identified by the lack of these bad prognostic features and, if totally excised, could be managed effectively with traditional polypectomy and appropriate surveillance.

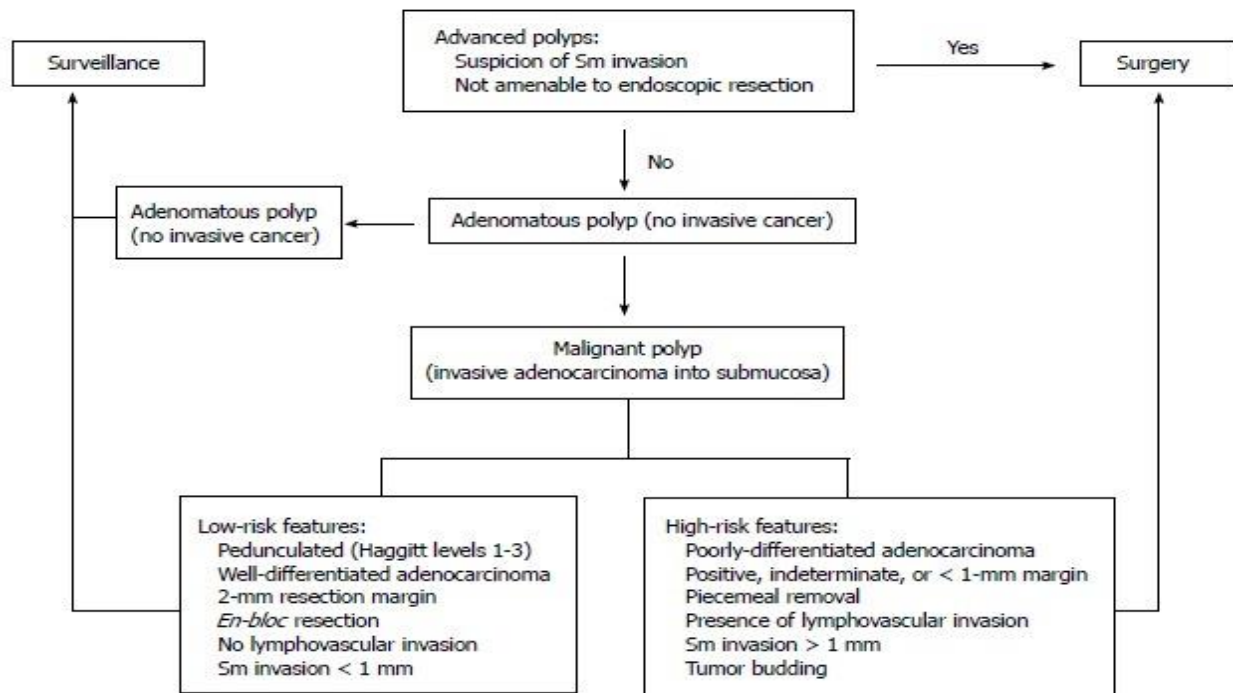


Figure 2. Algorithm for the management of malignant colon polyps.

Sm: Submucosal; EMR: Endoscopic submucosal resection.

Using this threat stratification, Choi et alia [24] reported a series of 87 patients that were adhered to prospectively after endoscopic resection of a malignant polyp. Amongst the 30 high-risk patients that chose surgical resection, 20% were discovered to have lymph node metastasis. Twenty patients with high-risk features chose surveillance or had prohibitive elements for radical surgery. Of these patients, 3 (15%) had a reoccurrence. There were 30 patients without threat elements, and none created lymph node metastasis or recurring cancer after opting for surgery or surveillance [24].

• Surgery

The success of therapy of a malignant polyp relies on the total resection by polypectomy or surgical intervention. When en-bloc elimination of a polyp is performed, it is feasible to assess the deepness of infiltration of the tumour cells and whether the margin is impacted. Pedunculated malignant polyps are conveniently removed using a loop snare. However, this technique frequently causes piecemeal removal when related to sessile and flat malignant polyps. However, around one-third of malignant polyps are eliminated in this way [29]. En-bloc elimination is beneficial because it allows complete histological analysis of the total resection and is related to lower recurrence rates compared to piecemeal removal [30]. Endoscopic submucosal dissection (ESD) has been located to be specifically helpful for the removal of sessile or flat adenomatous lesions. It has an advantage over other endoscopic techniques in that it enables en-bloc removal of large (> 2 centimeters) colonic lesions. In ESD an electrosurgical cutting tool is utilized to carefully dissect the deeper layers of the submucosa to eliminate neoplastic lesions in the mucosa. In a meta-analysis it was located that ESD en-bloc resection is attained in 84.9% of lesions, and clear upright and side margins are accomplished in 75.3% of situations [31].

Polypectomy needs to be done en bloc, because this is vital to establish and define beneficial or unfavourable histological criteria. In just a few cases, just polyp biopsies are performed, such a lack of coagulation information, polyp might be difficult to eliminate then in time, or the patient being on antiplatelet medications or anticoagulants.

The indication for a malignant polyp with sessile morphology, despite favourable histological requirements, is surgery [13], especially in patients younger than 50 years old, that have the tendency to existing less surgical difficulties [32]. Surgical treatment is advised for malignant polyps with pedunculated morphology which have damaging histological requirements (partial polyp resection, badly differentiated cancer, vascular or lymphatic intrusion, or lesions ≤ 1 mm from the polypectomy) [13]. On the various other hand, for malignant polyps with pedunculated morphology yet with favourable histological standards, polypectomy is considered to be curative. Non-invasive high quality neoplasia despite their morphology, are considered to be cured with polypectomy. Without a doubt, inning accordance with some writers, polyps harbouring "in situ" or "intramucosal" cancer needs to not be related to or treated as malignant polyps [32].

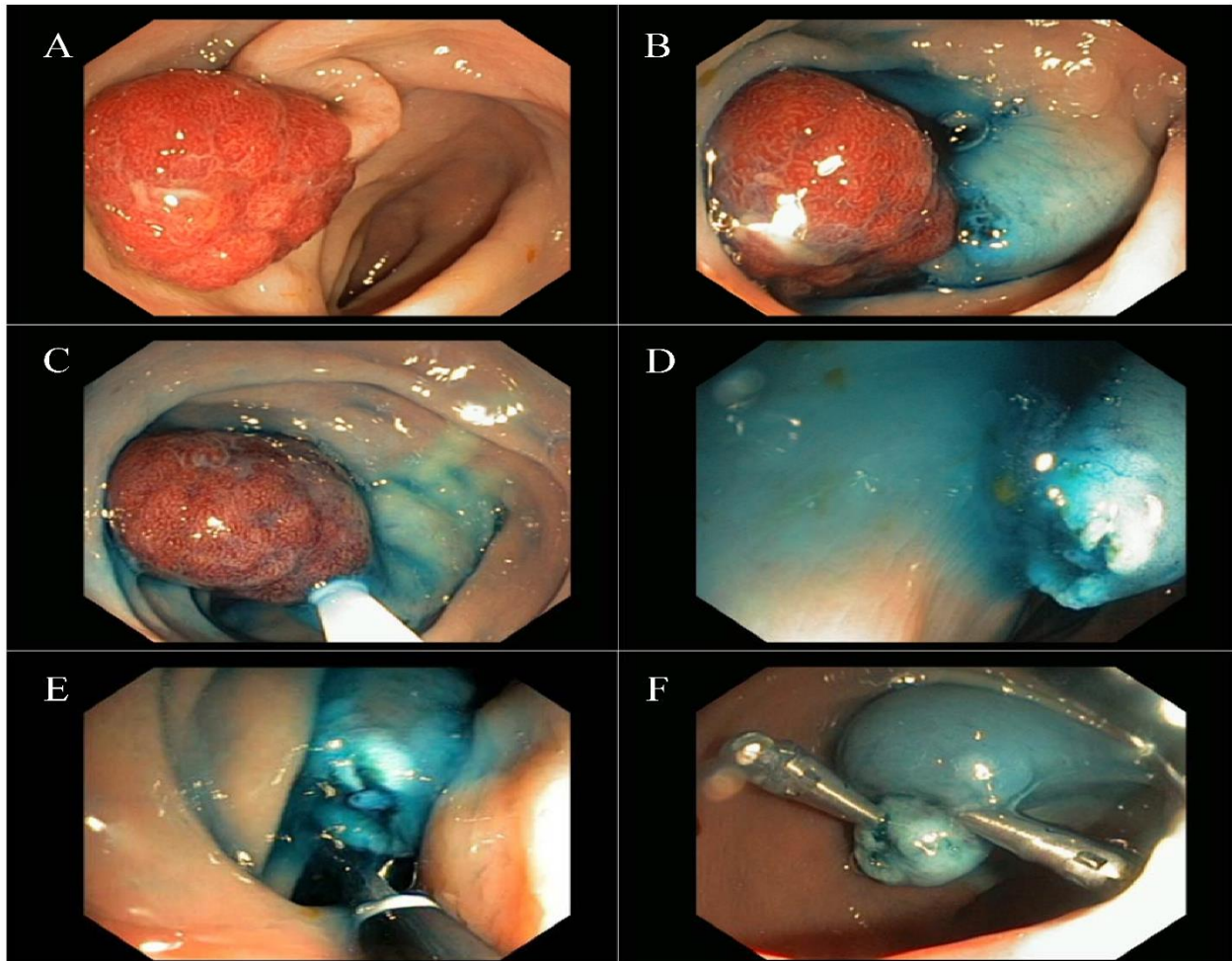


Figure 3. Endoscopic Mucosal Resection in a 0-IIa + Is polyp in colon (A-E), with control of the base after one month (F).

However, until now in lots of pathology reports were not reported histological criteria. As an example at the University of Minnesota between 1987 and 2000, 83% of the reports are not angiolympathic vessel invasion, 69% not reported the depth of invasion by cancer cells and 22% no stated the level of tumour distinction [33]. Beside the agreement amongst experienced pathologists was poor relative to histological quality of differentiated cancer and angiolympathic vessel invasion [33]. Endoscopic submucosal dissection (ESD) has become a possible strategy to effectively resect malignant colonic polyps en bloc [34]. The method makes it possible to treat and heal large (> 2 cm) sessile and flat polyps allowing pathological analysis in a lot of patients, also can be an alternative to surgery for older patients and for those experiencing from associated problems that contraindicate surgery.

An exemption to these guidelines is patients with malignant polyps, with sessile or flat morphology, that are situated in the rectum. The occurrence of distant metastases is associated to T-stage and, after radical resection of T1 tumors, the 5-year rate of metastases has to do with 10% [35], much like various other areas of malignant polyps. About 50% of the regional recurrences complying with local resection are curable if the patients are included in an intensive follow-up program. Local resection ought to be provided to patients whenever the individually calculated risk of short-term mortality after significant surgery exceeds twice the additional danger of local reoccurrence added by local treatments. An

adequate preoperative evaluation of the patient's general health is necessary prior to choosing the method of treatment for the individual T1 rectum cancer patient.

4. CONCLUSION

Pathologists play an important role in the diagnosis and management of malignant colon polyps, hence pathologic reports need to be as informative and full as possible and contain all the information the clinician requires for additional management and surveillance. Medical diagnosis of malignant colon polyp requires the presence of tumor cells that are penetrating beyond the muscular mucosa right into submucosa (pT1). As well as developing a medical diagnosis of malignant polyp, it is extremely important to report the size of the invasive part, the existence or absence of lymphovascular invasion, the degree of tumor differentiation and the distance of the carcinoma from the line of resection.

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