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MINI-SYMPOSIUM: PATHOLOGY OF COLORECTAL POLYPS

Pathology of the endoscopically removed malignant colorectal polyp

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Malignant colorectal polyp;
Colorectal carcinoma;
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Summary The management of the patient with an endoscopically removed malignant colorectal polyp is predicated on proper handling of the specimen and on the pathologist's histopathological interpretation. The steps of specimen handling are: (1) fixation, (2) gross examination and sectioning, (3) processing, and (4) endoscopic findings and type of removal. The histopathological parameters to be reported on are: (1) the status of the resection margin, (2) the grade of the cancer, and (3) the presence or absence of lymphovascular invasion. Polyps with grade I or II cancer, no lymphovascular invasion and a negative resection margin can be successfully treated by endoscopic polypectomy, whereas those with grade III cancer, lymphovascular invasion, or a positive/close margin require definitive surgical resection subsequent to endoscopic polypectomy. Potentially, new significant parameters for patient management are: (1) depth of invasion, (2) tumour budding, (3) lymphatic vessel density, and (4) cribriform histology. The pathology report must be clear and concise, indicating all relevant important parameters. Finally, the pathologist must differentiate invasive adenocarcinoma from intramucosal adenocarcinoma and 'pseudoinvasion'.

Introduction

The pathologist plays a highly critical role in the management of the patient with an endoscopically removed malignant colorectal polyp as the histopathological interpretation is the most important consideration for subsequent management. A malignant colorectal polyp is a lesion in which cancer has invaded through the muscularis mucosae and into the submucosa.[1–4] Based on the pathologist's report, the clinician can make a sound judgement on whether polypectomy alone is adequate therapy or whether the patient needs to undergo a subsequent definitive surgical resection. The diagnostic process involves: (1) the technical handling of the specimen from the time it is received in the laboratory and (2) pathological interpretation and reporting, in an accurate and meaningful fashion. This article provides practising pathologists with the necessary information needed to fulfil their important role in the management of the patient with an endoscopically removed malignant colorectal polyp.

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Technical handling of the specimen

Fixation

The polyp should be placed in an adequate volume of fixative (at least 10 times the volume of the tissue). This statement is obvious to practising pathologists, but it is not uncommon to receive specimens from the endoscopy suite in less than optimum volumes of fixative, necessitating the addition of an adequate volume of fixative by the pathology laboratory. The length of time needed for adequate fixation varies with the size of the polyp (e.g. larger polyps needing longer fixation). It has been our personal experience that for polyps less than 1.5 cm in diameter, 2–3 h of fixation of the whole polyp in a large volume of neutral buffered formalin followed by 2 h fixation of the cut specimen prior to loading on the tissue processor is adequate. Polyps larger than 1.5 cm in size should initially fix for longer periods of time and if possible overnight.

By careful palpation of the polyp, the pathologist can determine when the polyp is adequately fixed (e.g. the polyp feels firm and lacks friability). Other investigators recommend 2–6 h in zinc-substituted Zenker's or Hollande's fixative,[5] or Hollande's or 4% formaldehyde until firm. With Hollande's, this may allow trimming after as little as 20 min of fixation.[2] Others recommend 12–48 h of fixation depending upon the size of the polyp.[3,4]

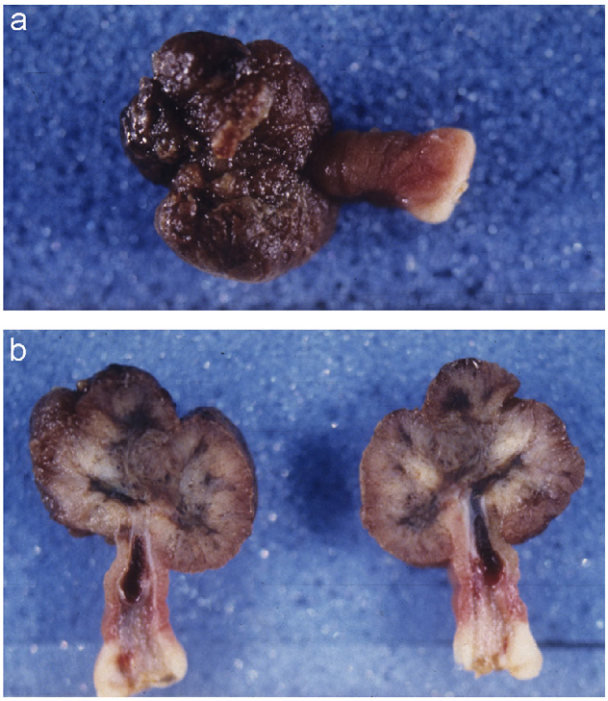

Figure 1 (a) A gross pedunculated polyp after fixation. The stalk and head are readily identifiable. (b) The polyp after proper sectioning (e.g. being cut vertically through the stalk and head). This assures that all important microscopic landmarks will be assessable.

Gross examination and cutting of the polyp

The stalk of a pedunculated polyp or the point of transection of sessile or semi-pedunculated polyps should be identified and inked. These are important landmarks to be used for the gross sectioning of the specimen. We believe that polyps should be cut in the sagittal plane through the stalk or the point of transection such that all the relevant microscopic landmarks will be easily assessable (Figs. 1 and 2). However, others prefer to trisect the polyp by cutting on either side of the stalk, thereby preserving the deepest aspect of the cancer for

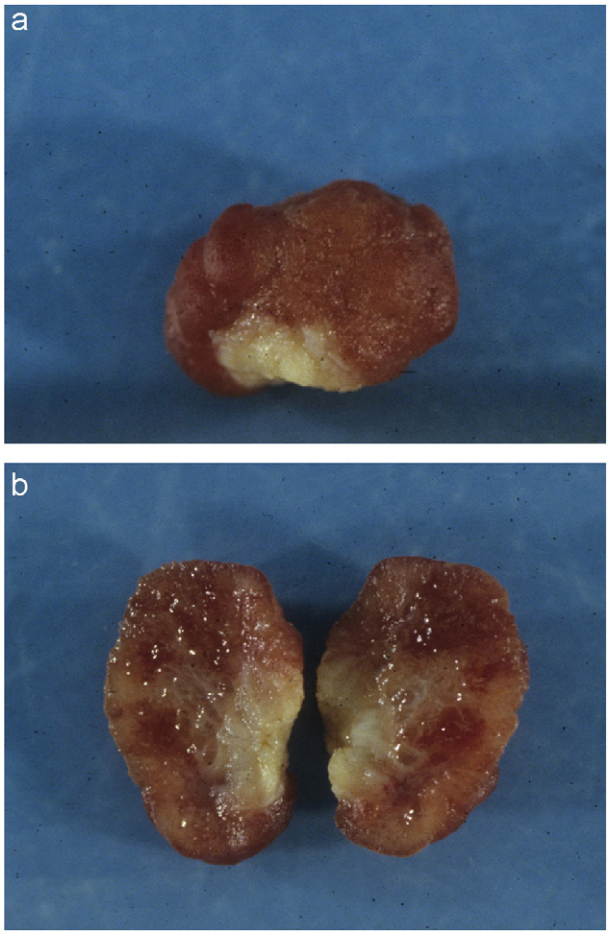

Figure 2 (a) A gross polyp without obvious stalk (after fixation). Note the whitish ashened area that is the point of transection. (b) The polyp after orientation and proper sectioning through the point of transection. Now all important landmarks will be microscopically assessable. (Reproduced from Cooper HS et al., *Hum Pathol* 1998;**29**:15–26, with permission from Elsevier.)