REVIEW

The effective use of gastrointestinal histopathology: guidance for endoscopic biopsy in the gastrointestinal tract

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ABSTRACT

This is the first of three articles, published in *Frontline Gastroenterology*, that provides practical guidance of what to, and what not to, biopsy in the gastrointestinal (GI) tract. This initiative was established by the Endoscopy and Pathology Sections of the British Society of Gastroenterology, and the guidance is published with an initial general review (this manuscript), followed by practical guidance on upper GI and lower GI endoscopic biopsy practice. The three articles are written by experienced operatives, each one by a pathologist and an endoscopist, working in the same hospital/group of hospitals.

Biopsy and histological assessment provide a critical adjunct to endoscopic assessment of the gastrointestinal tract and, in diseases such as cancer, coeliac disease and chronic inflammatory bowel disease, pathological diagnosis remains the gold standard. Histological assessment of biopsy material is a major part of the workload of a histopathology laboratory in the UK: in large 'district general' hospitals, it comprises about one quarter of the workload. In 2002 (and revised in 2005), the Royal College of Pathologists published the results of its working party, 'Histopathology/Cytopathology of limited or no clinical value'.¹ Application of the recommendations of the first edition of the Working Group's deliberations has shown that endoscopic biopsy and histopathological workload can be considerably reduced by ensuring that only appropriate biopsies are undertaken.²⁻⁵ This is not to deny the importance of research and the use of comprehensive biopsy protocols, such as the Sydney system for gastritis, in that

type of research.^{6,7} However, it is critical that endoscopists do not practice 'pseudo-research', and that such biopsies are only taken according to established research protocols.

Endoscopic practice should not be governed by the premise that an examination is not complete without a biopsy.⁸ If there are no indications for biopsy, especially in upper GI endoscopy, then no biopsy should be taken.¹ For instance, we can see no indication for routine duodenal biopsies, outwith the appropriate clinical setting, in a patient, presenting with, say, dyspepsia. Further, histological assessment of GI biopsies is a time-consuming and relatively expensive exercise. Routine GI biopsies cost in the region of £60.00 for pathology departments, not to mention the extra time it takes to take and process a biopsy in the endoscopy department, and the consumables. By contrast, endoscopic tests for *Helicobacter*, for instance, cost less than £5.00. So, a good example of inappropriate use of histology is the biopsy of the stomach in the presence of endoscopic 'gastritis' or in the absence of endoscopic abnormality. What the endoscopist thinks is gastritis is poorly correlated with the demonstration of gastritis on histological assessment of biopsies.⁹ The practice of biopsying the normal or near-normal stomach has not been shown to increase the demonstration of neoplasia.¹⁰ The diagnosis of *Helicobacter* gastritis can be achieved by much cheaper means, and there is no evidence base, in our view, that the additional features likely to be demonstrated, such as reactive gastritis, intestinal metaplasia and the grade of

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chronic active gastritis, modifies the subsequent management of the patient.¹

Given the gap between recommendations and clinical practice, the inexorable increase in demand for gastrointestinal endoscopy and the imperative to use healthcare resource as effectively as possible, it is essential that we address the challenge of the appropriateness of endoscopic biopsy for histological analysis. In these three articles, we publish guidance on when and what to biopsy during endoscopic procedures. The guidance recommends a pragmatic approach based on the principle that a biopsy should only be taken if it has the potential to materially influence management. It is appreciated that sometimes biopsies are taken purely for the purpose of excluding cancer: if there is an endoscopic lesion where the diagnosis of neoplasia is possible, then biopsy is, of course, always recommended.

In order to rationalise the use of expensive histopathological resource, we need to understand why some practitioners biopsy more frequently than others. Evidence and practical experience indicate that a less experienced endoscopist is more likely to undertake unnecessary biopsies. This probably reflects three key differences between the experienced and less experienced: first, an experienced endoscopist has more confidence (through more knowledge and greater experience), making a positive judgement that there is no serious underlying disease. Second, he or she has a better understanding of whether a biopsy might help management. Third, an experienced endoscopist is more willing to accept a higher risk of missing something. These factors are particularly apposite for non-medical endoscopists, who are not usually *assessing* patients with gastrointestinal symptoms (as opposed to managing them according to protocols), and who are less comfortable with uncertainty and risk.

To help practitioners take fewer biopsies without an increased risk of missing serious pathology, there needs to be clear-cut guidance and ways of enforcing it. In the last 8 years, there has been, appropriately, a strong emphasis on improving the quality of endoscopic procedures. Some of this has included key pathology-related performance indicators, such as biopsies of the colon for patients with watery diarrhoea when endoscopic examination is normal (see JAG website: <http://www.thejag.org.uk>). In other circumstances, recommendations are encapsulated in national guidelines, such as the role of biopsies in the diagnosis and surveillance of Barrett's oesophagus. If we are to deliver the best care within available resources, all such recommendations within accredited guidance should, in time, become performance indicators. We believe that the current guidance will give greater clarity to endoscopists and pathologists. For it to be effective, endoscopy teams need to monitor adherence to the guidance (as they currently do for

endoscopy performance indicators), and then act on performance outside the recommendations. We are confident that this will lead to fewer biopsies taken during endoscopic procedures, reducing pathology costs and improving the productivity of endoscopy units with shorter endoscopic procedures and lower consumption of disposable biopsy forceps.

It is appreciated that, in some circumstances, the evidence base underpinning the recommendations is not strong. It is also appreciated that, in some patients, it may be inappropriate to follow the guidance. In view of this, it is recommended that endoscopy teams use the recommendations based in the two accompanying articles to create local guidance with performance indicators specific to their own department. When reviewing performance, it is recommended that there is some leeway given in reviewing individual practice, particularly if the individual has an unusual caseload. We anticipate that the publication and regular review of locally agreed guidance will not just help educate endoscopists but also provide them with the confidence not to biopsy. An example of such guidance, widely used in endoscopy departments in Leeds, and evolving from the Royal College of Pathologists' 'Histopathology/Cytopathology of limited or no clinical value' working party,¹ is given in table 1.

A histological opinion is, like a radiological opinion, entirely dependent on information about the case and the questions being asked. To improve the information provided to pathologists, it is recommended that each unit develops, with pathology colleagues, simple guidance of what information should be provided on the request form. Despite, it would seem, some clinicians believing that a pathologist should be given no clinical or endoscopic details and should assess biopsies entirely blind, this is quite clearly inappropriate and misguided. It is also a truism that many clinicians believe that they should be in 'pathology mode' when completing pathology request forms. This is very much not the case. Pathologists prefer clinicians to stay in clinical mode and give accurate clinical details and, particularly, endoscopic details. It is extraordinary how often the latter is not given. If there are colonoscopic biopsies and the only clinical details given are 'chronic diarrhoea', is the pathologist to assume that the colonoscopy is normal? The pathologist can only make a diagnosis of 'microscopic colitis' when the colonoscopy is normal (or near normal, as we are learning) and, therefore, provision of the accurate endoscopic details is critical.

Pathologists do not need reminders of what diseases they should be looking for on request forms. If random duodenal biopsies are taken, they know full well that, most likely, the clinician is suspecting, or is attempting to rule out, coeliac disease, and pathologists do not need prompts for diseases they should seek. The first author of this treatise has a particular

Table 1 Guidance for biopsy practice used in endoscopy departments in the Leeds area

Biopsy?	YES	NO
Oesophagus	Diagnosis and surveillance of Barrett's (4 biopsies every 2 cm) Any focal lesion or ulceration When the clinical and endoscopic data suggest eosinophilic oesophagitis	Normal oesophagus Reflux oesophagitis unless ulceration Ultrashort segment Barrett's
Stomach	Any focal lesion Unusual appearance or high suspicion of dysplasia/malignancy (when suspecting malignancy take 8 biopsies from the lesion, avoiding the ulcer base)	Normal stomach Diffuse 'gastritis'—use CLO test to determine <i>Helicobacter pylori</i> status
Duodenum	Diagnose/exclude coeliac disease when clinically indicated (≥3 biopsies in 1 cassette)	'Duodenitis' at endoscopy
Colorectal	Normal colonoscopy in patients with persistent watery diarrhoea (send 2 cassettes—3 biopsies from right side and 3 from left side) Any polyp/other focal lesion Patient with known or genuinely suspected IBD	Other normal colonoscopy Ileal biopsy to demonstrate that the ileum has been reached Random rectal biopsy for rectal bleeding.

aversion to the use of a question mark followed by a putative diagnosis. This gives the pathologist no idea of the likelihood of the suggested diagnosis. For instance, the question mark can, in our experience, mean anything from 'most unlikely but please exclude' to 'definite changes seen at endoscopy'. Indeed, we have evidence from our own practices, to show that such a practice can have adverse consequences leading to erroneous diagnoses and inappropriate patient management. Perhaps this is particularly apposite with the oft-seen '? dysplasia' written on pathology request forms. The first author has seen many examples where dysplasia has been overcalled, and the more appropriate diagnostic category 'mucosa indefinite for dysplasia' has not been used, because the pathologist has been swayed by the suggestion, from clinicians, that dysplasia is likely to be present.

We hope that these articles do, in particular, provide useful guidance on what to, and what not to, write on pathology request forms. Pathologists much prefer the provision of accurate clinical and endoscopic details: 'Iron deficiency anaemia. Upper GI endoscopy normal.' is much more suitable than '? HP'. A simple solution to the conundrum of ensuring appropriate clinical details is to enclose/attach a copy of the endoscopy report, which will usually have all the necessary information: presenting symptoms and reason for the procedure, endoscopic findings, therapy and follow-up plans. Indeed, there is evidence from centres, in the UK at least, that this is an ever-increasing practice with the endoscopic report attached to the pathological request form in every case, a policy which we very strongly endorse. Eventually, with electronic requesting and electronic patient records more widespread than they are currently, pathologists' ability to access such systems may abrogate the need for the currently recommended provision of endoscopy reports.

Endoscopic practice is undergoing a revolution with the development of much more accurate video-endoscopy, magnifying endoscopy and

techniques such as chromo-endoscopy, auto-fluorescence imaging and narrow band imaging.^{11–14} It is likely that these techniques will eventually make redundant random biopsy protocols for diseases such as Barrett's oesophagus and chronic inflammatory bowel disease. This will, eventually, create a much more appropriate directed biopsy practice for the detection of neoplasia complicating these diseases and reduce pathological workload. Furthermore, new developments may eventually abrogate the need for histological assessment in certain situations, perhaps especially for small colorectal polyps.¹⁵

We believe that there is an opportunity to rationalise the use of gastrointestinal pathology without compromising the effective management of patients. We recommend that endoscopy teams work with their local pathologists to create and enforce local guidance based on the accompanying articles on endoscopic biopsy practice in *Frontline Gastroenterology*. While we accept that comprehensive guidance documents such as these make for arduous reading in the immediacy of the endoscopy room, we would encourage the use of schemata for biopsy-taking for routine use in endoscopy departments.

This guidance represents, to our knowledge, the first UK-based wide-ranging initiative for endoscopy biopsy practice in the GI tract. In particular, we have provided recommendations for the accurate diagnosis of GI pathology, but it also addresses areas where histological assessment cannot be justified, especially based on relative cost and relative sensitivity and specificity, compared with other diagnostic modalities. In that way, it differs from recently published guidelines in the USA.¹⁶ Like those guidelines, our guidance is evidence-based advice that should not be regarded as definitive but can be modified according to local practice and protocols.

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