LETTERS TO THE EDITOR

Measurement of the stiffness of endoscopes—a plea for commonality

EDITOR,—In a previous issue (*Gut* 2000;**46**:801–8), Brooker and colleagues described their experience with an exciting new variable stiffness colonoscope. They made the point that a stiffer colonoscope shaft reduces recurrent looping but makes passage through an angulated sigmoid more difficult and causes more stretching and hence pain when loops do occur. Conversely, the more flexible thinner paediatric instruments are better for negotiating a fixed or narrow sigmoid colon but then tend to allow recurrent loop formation later in the procedure. Their randomised trial using either a standard Olympus CF200HL (13.3 mm shaft diameter) or a prototype (Olympus XCF-SH230L—12.9 mm shaft diameter) variable stiffness colonoscope looked very promising although in one case a paediatric Olympus PCF230I (11.3 mm shaft diameter) was required to get past a fixed sigmoid secondary to diverticular disease.

In addition to Brooker *et al*, there are a number of research workers[1–4] and endoscope manufacturers interested in colonoscope/flexible sigmoidoscope shaft stiffness and its relation to patient discomfort/procedure time, yet sadly there is no agreement as to the best way to express (and thus directly compare) results. The beam deflection technique adopted by Brooker *et al* appeared to us to be an entirely arbitrary one involving a strain gauge, 5 cm shaft deflection, and just three duplicate measurements every 10 cm along the three instruments.

We agree with Wehrmeyer and colleagues[1] that flexural rigidity is a more precise, accurate, and reproducible engineering parameter to measure when trying to compare endoscope shaft stiffness. In beam bending theory, the flexural rigidity is *EI*, which is the product of the modulus of elasticity (or Young's modulus) *E* and the second moment of area *I* of the beam cross section about an axis through the centroid perpendicular to the plane of bending. *EI* is given by the following expression:

$EI = WL^3/192\delta$

where *W* is the load applied at the centre of the beam, *L* is the length of the beam, and δ is the deflection at the centre. In our own studies, the value of *W* (typically either 0.5 to 1 Newtons) was selected such that δ (mean of 10 readings) was less than 0.5% of the length of the 20 cm "beam". An example of the results obtained is shown in fig 1 in which mean (SD) flexural rigidity values (in N cm^2) are compared for (a) an Olympus PCF 240I (11.2 mm diameter) instrument, (b) a fibreoptic Olympus CF20HL (13.3 mm diameter) endoscope, and (c) an Olympus CF-240AL (12 mm diameter) variable stiffness colonoscope. These three instruments were taken as being the nearest we had available in our own unit to those employed in the study of Brooker *et al*. Although our results are expressed in different units, the shape of the curves are remarkably similar to those published by Brooker *et al*. We confirm that

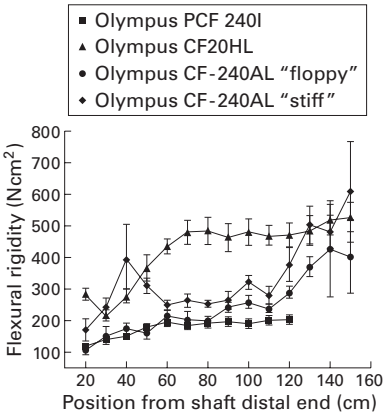

Figure 1 Mean (SD) flexural rigidity measurements (N cm^2) of three different colonoscopes: (a) Olympus PCF 240I, (b) Olympus CF20HL, and (c) Olympus variable stiffness CF-240AL instrument in its "floppy" and "stiff" modes.

the now commercially available variable stiffness Olympus colonoscope can indeed significantly alter its shaft stiffness from being almost as floppy as a paediatric endoscope to as stiff as a standard Olympus 20HL near its most proximal end.

We agree with Brooker *et al* that modifications that may enhance the efficacy of a variable stiffness colonoscope might include "more floppiness in the paediatric setting and greater stiffness at the maximum stiffness setting" .

We welcome debate and discussion on how best to measure endoscope shaft stiffness. In the meantime, until a better way of expressing the results is suggested, it would seem to us that some form of simple beam displacement methodology to determine flexural rigidity has the advantage of at least being relatively easy, reproducible, and inexpensive to perform.

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Research outcomes in British gastroenterology: an audit of the subsequent full publication of abstracts presented at the British Society of Gastroenterology

EDITOR,—The presentation of abstracts at scientific meetings provides an opportunity to rapidly convey the results of novel research. It also allows the researcher a chance to receive informal peer review. This may help to clarify aspects of the work, particularly in the identification and correction of potential weaknesses prior to submission for full publication. Although abstracts submitted to conferences are peer reviewed, this process may not be as rigorous as that of an indexed journal considering publication of the full manuscript.[1]

Presentation of an abstract at a prestigious meeting may suggest that full publication is probable. Certainly, acceptance as opposed to rejection increases the likelihood of subsequent publication, but this is not absolute.[2] Other medical specialities have studied their societies' publication rates and this value varies from 21% to 66%.[3 4]

There have been no studies evaluating the outcome of abstracts presented at gastroenterology meetings. Therefore, we audited the publication rate of abstracts presented at a single British Society of Gastroenterology (BSG) meeting.

All abstracts presented at the BSG meeting of March 1994 (n=255) were assessed. Two independent database searches were performed (MEDLINE and EMBASE) using cross referencing of first author, senior author, and key words from the abstract title. The abstract and possible resultant manuscript were then examined in tandem to ensure they represented the same study. Where no paper appeared to have been published, the authors were contacted to ascertain the outcome of their abstract.

Factors which may influence publication, including study type, design, category, sample size, journal of publication, impact factor, and lag time to publication were analysed. Data pertaining to submission/publication at the meeting of the American Gastroenterology Association (AGA) in the same year were also collected. Statistical analyses were performed using contingency tables and χ^2 statistics for nominal data and the Mann-Whitney U for continuous data.

There were 178 abstracts (69.8%) published from this meeting. Median lag time to full publication (fig 1) was 19 months (range 0–66). Of the abstracts published, 61 (23.9%) were in high impact factor journals (arbitrarily designated $\geqslant$4). The mean impact factor was 2.5 (median 2.9).

There were 96 abstracts from this particular BSG that were concordantly submitted to the AGA. Of these, 73 were accepted for presentation. Ultimately, 58 were fully published. Presentation at the AGA in the same year was the only factor that significantly increased the likelihood of publication (p=0.001; odds ratio 3.1 (95% confidence interval 1.5–6.4)). Acceptance at the AGA was a strong predictor of subsequent publication and may represent the hypothesis that concordance of two independent referee systems often reflects the papers of greatest scientific merit.[5] Alternatively, this may suggest that AGA reviewers are more stringent. This is not possible to assess with the data available.

This is the first study to assess publication rates of the BSG or indeed any specialty in the UK. We chose to study the abstracts of the 1994 BSG meeting because previous reports have suggested that the majority of abstracts are published in indexed journals within four years of presentation.[3 4 6] The outcome of one individual meeting may not be considered as representative of other meetings and could limit the validity of our

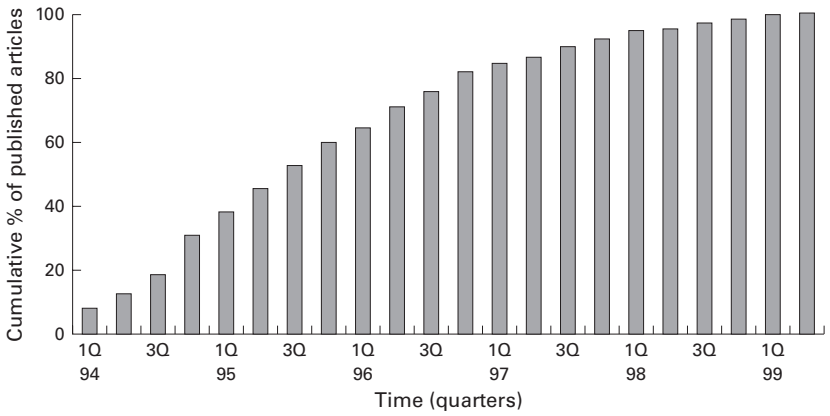

Figure 1 Time between abstract presentation and publication.

audit. However, previous similar studies from other societies have suggested that their publication rates vary by as little as 5% from year to year. Thus assessing one meeting may be adequate.[6] In conclusion, acceptance of abstracts by the BSG meeting suggests more than a 2 in 3 chance of subsequent full publication. This compares favourably with similar studies of other societies.

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Leptin in the human stomach

EDITOR,—After the report in 1998 by Bado and colleagues[1] describing the presence of leptin in rat stomach, we have recently reported the first evidence of leptin in the stomach mucosa of humans.[2] It was shown that the cells in the lower half of the stomach glands were clearly immunoreactive for leptin, and both leptin mRNA and leptin protein in the human gastric epithelium were detected. Western blot analysis showed the presence of a 16 kDa band corresponding to leptin and a 19 kDa band which, as suggested for rats,[1] could represent a leptin precursor. It was also shown that secretory granules of chief cells contain this hormone, suggesting that gastric leptin could function in the short term system control of feeding behaviour and that it is secreted (probably together with pepsinogen) in the stomach lumen by chief cells. Confirmation of these findings was reported by Sobhani and colleagues.[3] They also showed the presence of leptin receptor in stomach epithelium, suggesting a possible paracrine pathway for leptin. Stomach leptin levels seem to be higher in humans than in rats.[1 3]

Interestingly, Sobhani *et al* have also shown[3] that gastric leptin is simultaneously released into the blood and into the gastric juice by pentagastrin and secretin. They suggested that secretin has a direct effect on gastric chief cells, an idea based on the presence of secretin receptors on these cells[4] and on the efficacy of secretin in stimulating pepsinogen secretion.[5]

However, by immunoelectron microscopy we observed[2] the presence of leptin not only in chief cells but also in endocrine cells exhibiting a distinctive morphology in the basal portion of the gland. These cells showed secretory granules labelled with many leptin-gold particles.[2] Its ultrastructure corresponded to the P cell type.[6 7]

Thus secretory granules of both endocrine and chief cells contain leptin.[2] It is probably secreted in the stomach lumen by chief cells and into the stomach circulation by a special type of endocrine cell. The observation[3] that intravenous infusions of pentagastrin or secretin caused an increase in circulating leptin levels and leptin release into gastric juice is in keeping with both endocrine and exocrine secretory sources. They could function in the short term system to control feeding behaviour and in the gastrointestinal lumen to regulate the availability of nutrients acting in the sites where a non-degraded form of hormone would approach.

Our observation of much lower levels of leptin immunostaining in a patient under postpandrial conditions compared with five fasted patients[2] is in agreement with a likely functional response of human stomach leptin to food intake. The effects of cholecystokinin in the rat[1] and of pentagastrin and secretin in humans[3] stimulating emptying of stomach leptin are all strong arguments for a short term satiety role of leptin. There is also the observation that leptin interacts synergically with other short term satiety peptides.[8]

There is a need for further investigation in humans, with difficulties arising from ethical limitations. However, taken together, both articles[2 3] on leptin in the human stomach and the previous report in rats,[1] we can conclude that three important pathways (endocrine, exocrine, and autocrine) for the action of leptin are present in human stomach, where the main physiological role for this hormone is foreseen.

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Histological and genetic heterogeneity in synchronous hepatocellular carcinoma

EDITOR,—The recent paper by Sirivatanauksorn *et al* (*Gut* 1999;**45**:761–5) focused once again on the unresolved question as to whether (i) hepatocellular carcinoma (HCC) in human liver develops from a single clone or from multiple parallel clones and (ii) among multiple tumour nodules present in many patients, the smaller lesions represent intrahepatic metastases or "de novo" cancers. The authors correctly acknowledge that "information on the clonal origin of tumours will influence management strategies for prevention of recurrence after operation". They used arbitrarily primed polymerase chain reaction (AP-PCR)[1] to compare the DNA fingerprint of HCCs and regenerative nodules (RNs) removed from 13 cirrhotic explant livers. They found considerable genomic heterogeneity in 54 HCCs and 31 RNs that were microdissected. No two nodules (either RNs or HCCs) had identical electrophoretic