Preliminary experience comparing two thinner prototype Olympus endoscopes with a standard 60cm flexible sigmoidoscope

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Introduction
We previously used magnetic endoscope imaging to determine the anatomical location of the instrument tip and depth of insertion at non-sedated, screening flexible sigmoidoscopy (FS) using a 60cm Olympus flexible sigmoidoscope using the same magnetic imaging system (Painter et al., 1999) in 117 subjects attending for screening flexible sigmoidoscopy as part of the MRC trial (Painter et al., 1999).

Examination of the entire sigmoid was not achieved in approximately one-quarter of subjects, mainly due to discomfort. We postulated that instruments with different shaft characteristics (floppy, narrow calibre and over 100cm in length) might be necessary to ensure deeper routine intubation in non-sedated patients (Bell et al., 1996).

Methods
We used two prototype Olympus thin (10mm) diameter endoscopes (models XCFSEV and MS230I) measuring 100cm and 130cm respectively in 50 non-sedated asymptomatic patients undergoing diagnostic FS (see Figures 1a and 1b).

We used the magnetic imaging system (Bladen et al., 1993) in combination with our improved RMR 3D graphics system (Rowland and Bell 1998, Rowland et al., 1999) (see Figure 2) to assess both the total depth of insertion in cms and the location of the instrument tip when the endoscope had been either fully inserted or the patient experienced significant discomfort.

We compared the results with those we had previously obtained with the standard 12.5mm diameter 60cm Olympus flexible sigmoidoscope using the same magnetic imaging system (Painter et al., 1999) in 117 subjects attending for screening flexible sigmoidoscopy as part of the MRC trial (Painter et al., 1999).

Examination of the entire sigmoid was not achieved in approximately one-quarter of subjects, mainly due to discomfort. The entire descending colon (or beyond) was intubated in only 9 cases (8%) even after the full 60cm had been inserted (see Figure 5).

Results

In the 50 patients examined with either the XCFSVE or MS230I 10mm thin instruments, the mean insertion depth was 88.6cm (range 48.5 - 130cm) (see Table 1 and Figure 3).

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Discussion
The most painful part of a flexible sigmoidoscopy (which is normally carried out without any sedation) is often the passage of the instrument past the sigmoid-descending colon junction and up the descending colon itself. We have shown dramatic differences in the success rates in terms of reaching up to and beyond the splenic flexure depending on whether one uses a standard, relatively stiff 12.5mm 60cm flexible sigmoidoscope or a prototype, thinner, longer, “floppier” 100-130cm instrument (see Figures 3 and 5).

Many Endoscopy Units in the UK do not possess a 60cm flexible sigmoidoscope and instead use an adult 160-180cm colonoscope when performing flexible sigmoidoscopy. We doubt, however, that the average UK endoscopist using an adult colonoscope in an unsedated subject undergoing screening flexible sigmodoscopy is likely to get to the transverse colon in the over 50% of cases we have achieved with the thinner instruments in the present study.

We now plan a formal comparative prospection in unsedated subjects undergoing screening flexible sigmoidoscopy using either an adult Olympus CF230L colonoscope or the newly released floppier and thinner Olympus 9mm paediatric 160cm, compared with the 60cm CF200S endoscope.

References

Table 1 - Comparison between thin and normal FS

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<tr>
<th>Comparison between thin and normal thickness flexible sigmoidoscopy</th>
<th>FS</th>
<th>Thin FS</th>
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<tr>
<td>This flexible sigmoidoscopy of 60 or 130cm length</td>
<td>50 asymptomatic patients</td>
<td>117 asymptomatic patients</td>
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<td>Mean (SD) insertion depth 88.6 cm (24.2)</td>
<td>Mean insertion depth 52cm</td>
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<td>Range of insertion 48.5 - 130cm</td>
<td>Range of insertion 20 - 58cm</td>
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