Colonscopy using a thin prototype 130cm endoscope in combination with a modified enterooscope stiffening obturative

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Background

We previously used magnetic endoscope imaging (MEI) [1,2] to determine depth of insertion of non-sedated flexible sigmoidoscopy (FS) using both a standard 60cm FS [3] as well as longer and thinner (10mm diameter) prototype endoscopes (Olympus XCFSEV and MS230I) [4,5] see Figures 1a and 1b. The thinner prototype endoscopes appeared to produce less pain than standard thickness adult colonoscopes but we found they were simply too floppy and short to guarantee total colonoscopy in an acceptable percentage of patients.

Aims

We decided to see if colonscopy using a thin endoscope in combination with a suitable stiffening obturative [6] would a) be useful in certain cases in whom colonoscopy with a standard adult instrument had been unsuccessful, b) produce an acceptable intubation rate to the caecum when used in “all-comers”, c) cause less discomfort/pain than acceptable intubation rate to the caecum when used with adult colonoscopes compared with a prototype 10mm floppy and short to guarantee total colonoscopy [7].

Method and Results

We describe our experience using the MS230I 10mm diameter 130cm length Olympus prototype in combination with a cut-away 35cm muzzle-ended version of an Olympus enterooscope obturative (outer diameter 11.5mm) see Figure 1c. We compare this with the results obtained with standard diameter (12.8 and 13.2mm) adult colonoscopes all of which were 165cm in length (Olympus CF240L and CF230L or Pentax EC3840F2). In all we used MEI in 216 of the 279 colonoscopies performed (or supervised) by GDB from 4th February 1999 to 4th February 2000. In 36 of the MS230I patients and 104 of the patients examined with an adult colonoscopy we used a “painometer” as well as MEI [7]. Please see Table 1 for demographic details.

In the 217 patients in whom we used an adult colonoscopy, 78 had an overtube inserted as previously described [6] while no overtube was used in the remaining 139 cases. We succeeded in reaching the caecum in 202 patients thus giving an ITT colonoscopy rate of 93.1%. Of the 15 “failures” there were 4 with obstructions caused by stenosing carcinomas and 2 with inadequate bowel preparation so on a “per protocol” basis our total colonoscopy rate would have risen to 202/211 or 95.7% if no further action had been taken. Of the remaining 9 “failures”, 3 patients with IBS deemed the examination “intolerable” and asked for the examination to be terminated. In 5 of the remaining 6 patients in whom we had been unable to get beyond the sigmoidoscope/ascending colon junction with an adult enterooscope, we successfully carried out a total colonoscopy with the MS230I plus overtube thus increasing the per protocol success rate to 207/211 cases or 98.1%.

Table 1 - Demographic details of 279 patients colonoscoped

<table>
<thead>
<tr>
<th>Number</th>
<th>Adult</th>
<th>MS230I plus over</th>
<th>MS230I alone</th>
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<tr>
<td>No. (%)</td>
<td>127</td>
<td>104</td>
<td>48</td>
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<tr>
<td>Mean(SD) dose of preparation</td>
<td>27.7% P=0.0077</td>
<td>47/67 or 70.1% P&lt;0.0001</td>
<td>70.1% P&lt;0.0001</td>
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<tr>
<td>Mean(SD) number of episodes of discomfort/pain</td>
<td>7.2(5.6) P=0.0004</td>
<td>3.6(2.7) P=0.0004</td>
<td>70.1% P&lt;0.0001</td>
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<tr>
<td>Mean(SD) number of episodes of discomfort/pain</td>
<td>127.1(14.1) P&lt;0.0001</td>
<td>120.1(8.5) P&lt;0.0001</td>
<td>70.1% P&lt;0.0001</td>
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<tr>
<td>Mean(SD) depth of insertion</td>
<td>815.6(328.1)</td>
<td>995.8(366.9) P=0.0343</td>
<td>93.1%</td>
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Total episodes of recorded discomfort/pain during colonoscopy

With the MS230I and overtube combination, the 36 patients reported a mean of 3.6 episodes of discomfort compared with a mean of 7.2 episodes in women in whom the 35cm overtube was too short to adequately splint the left side of the colon. As a result the 130cm endoscope was simply not long enough to get beyond the hepatic flexure in either case – see Figure 2.

Conclusions

We have shown that a floppy 10mm diameter colonoscope can be passed to the caecum in over 95% of cases provided the left side of the colon is adequately splinted with a suitable overtube. Had the instrument been 160cm rather than 130cm in length then our success rate would have been even higher (see Figure 2). The thin endoscope was also a useful adjunct in the small percentage of patients in whom an experienced colonoscopist fails with a standard diameter adult instrument. The patient experienced significantly less discomfort than with a standard colonoscope but it took us on average about 4 minutes longer to reach the caecum. The thinner instrument was particularly useful in women who had pelvic adhesions as a result of a previous hysterectomy- see Table 1. A variable stiffness 10mm diameter 160cm instrument which could be used with or without a stiffening obturative would appear to have much to commend it particularly in female patients who have undergone previous pelvic surgery [8].

References