Acupuncture as an Alternative to Diazepam Sedation for Diagnostic Gastrointestinal Endoscopy

Anthony Stellon and Terence Palmer

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Summary
A study was undertaken to compare the differences in ease of intubation, emotional distress and physical discomfort during oesophago-gastro-duodenoscopy in 3 groups of patients: sedated with intravenous diazepam, receiving acupuncture, or being part of a control group having neither treatment. Patients were given the option of sedation. Those that declined were randomly divided into two groups, either receiving acupuncture or acting as a control.

Patient distress was measured by two independent methods: direct observation by the attending nurse and a self-report questionnaire. The observed and self-reported physical discomfort were significantly reduced in the sedation group compared to controls, but there was no significant difference in any measurement between the acupuncture and the control groups. Respiratory complications were least in the acupuncture group and there was some evidence of benefit from acupuncture in relieving emotional distress.

Key words
Acupuncture, Gastrointestinal endoscopy, Randomised controlled study, Sedation.

Introduction
Intravenous sedation with diazepam or midazolam reduces the distress associated with the procedure in patients undergoing diagnostic upper gastrointestinal endoscopy (1). However complications that arise from oesophago-gastro-duodenoscopy (OGD) are usually associated with the use of intravenous sedation and the dose given (2). Recently more patients have been undergoing endoscopy in primary care settings without the use of intravenous sedation so that the potential incidence of complications can be reduced. Although OCD can be tolerated without sedation, a study has shown that electroacupuncture given to patients prior to and during endoscopy was superior to placebo in reducing the associated physical discomfort (3). Our aim was to compare the ease of gastroscopic intubation, and the physical discomfort and emotional distress of patients undergoing OGD in groups receiving either intravenous sedation, acupuncture, or neither sedation nor acupuncture.

Method
A total of 206 patients referred for outpatient OGD were prospectively entered into this study during the period January to September 1998. Patients were asked whether they would prefer the OGD to be performed with or without intravenous sedation, and all were given three sprays of xylocaine to the pharynx; 95 patients (46%) chose to be sedated and received 2.5-20 mg (mean 8.0mg) of intravenous diazepam. Those patients that chose not to be sedated were randomised either into the control group of 53 patients (25%), receiving no form of distress intervention, or an acupuncture treatment group of 54 patients (26%). The acupuncture points used were LI.4, PC.6 and ST.9 bilaterally, together with CV.23 and 24. Half to one inch 32g needles were inserted into these points, stimulated for 1-2 seconds and left in-situ for 5 minutes prior to and then throughout the endoscopic procedure. Oxygen saturation was measured by pulse oximetry throughout the procedure. Patient distress was measured by two independent methods. Firstly, the attending nurse observed the ease of and number of attempts at endoscopic intubation and the degree of gagging, and scored on a 5 point ordinal scale the observed emotional and physical distress of the patient at the start of and during the procedure. Secondly, a questionnaire was completed by the patient prior to leaving the endoscopy suite: this consisted of 35 items scored on a 5 point Likert scale of alternating bias to prevent conformity. The questionnaire enquired about the patients’ experience of the endoscopic procedure from the moment of entering the endoscopy suite to their subsequent discharge home.

Statistical tests for differences between sample sub-groups were conducted using the
Whitney for the non-parametric observation data and the independent t-test for the interval level parametric data of the self-reported questionnaire. Two internal consistency estimates of reliability were computed for the questionnaire: Cronbach’s Alpha and a split-half coefficient expressed as a Spearman-Brown corrected correlation. For the split-half coefficient the scale was split as equally as possible: one half containing all odd numbered items and the other even numbered items. Cronbach’s Alpha produced a correlation of 0.85 and Spearman-Brown split-half a correlation of 0.76, indicating that the questionnaire had an acceptable level of reliability.

**Results**

Observational data were obtained for all 206 patients entered into the study; 199 patients agreed to complete the questionnaire, 13 refused to return it and 13 returns were spoiled, leaving the remainder of 173 for analysis. The number of patients that underwent OGD in each group, and the age and sex distribution are shown in **Table 1**. The observed number of attempts at endoscopic intubation, and the emotional distress and physical discomfort scores were all significantly lower in the sedated group as compared to both the control and acupuncture groups (**Table 2**).

The self-reported scores for ease of intubation and physical discomfort were significantly lower in the sedated group as compared to both the control and acupuncture groups (**Table 2**). Although the self-reported emotional distress was lower in both the acupuncture and sedated groups as compared to the control group this just failed to reach statistical significance.

Eight (8.8%) in the sedated group and 2 (3.8%) in the non-sedated group, but no patients in the acupuncture group, needed oxygen therapy and attention to respiration during the procedure. One of the sedated patients additionally required the benzodiazepine antagonist flumazenil to reverse the respiratory depressant effects of over-sedation.

**Discussion**

The findings of this study would indicate that sedation with diazepam is superior to both non-sedation and acupuncture in reducing patient distress during upper gastrointestinal endoscopy. The comparison between control and acupuncture groups and those given diazepam cannot be fully validated as patients were not randomised between all three groups, only between control and acupuncture, nor was there blinding of either patients or observers. This initial self-selection is likely to have biased the results, demonstrated by the fact that a higher female to male ratio is seen in the sedated group (2:1) compared to either of the two other groups. Previous studies have shown that males have a lower tolerance of physical discomfort than females, and this may have led to disproportionately higher distress scores in the non-sedated patients when compared to the sedated group (4). A comparison between the control group and the acupuncture group is valid to a degree, in that patients opting for non-sedation were randomised between the two groups although they were aware of the treatment they were being given. The failure to show a difference in physical discomfort scores between these two groups is at odds with a previous study using

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### Table 1
**DEMOGRAPHIC VARIABLES IN GASTROSCOPY PATIENTS STUDIED**

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Sedation</th>
<th>Acupuncture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>53</td>
<td>95</td>
<td>54</td>
</tr>
<tr>
<td>Age: mean</td>
<td>57</td>
<td>58</td>
<td>56</td>
</tr>
<tr>
<td>Age: (range)</td>
<td>(20-90)</td>
<td>(25-95)</td>
<td>(25-85)</td>
</tr>
<tr>
<td>Sex: M/F</td>
<td>30/23</td>
<td>34/61</td>
<td>34/20</td>
</tr>
</tbody>
</table>

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### Table 2
**OBSERVED INTUBATION ATTEMPTS AND EMOTIONAL AND PHYSICAL DISTRESS SCORES**

**Table 2**

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Sedation</th>
<th>Acupuncture</th>
</tr>
</thead>
<tbody>
<tr>
<td>No of intubation attempts</td>
<td>1.68</td>
<td>1.37**</td>
<td>1.57</td>
</tr>
<tr>
<td>Observed ease of intubation</td>
<td>2.94</td>
<td>2.98</td>
<td>3.54</td>
</tr>
<tr>
<td>Emotional distress (E) score</td>
<td>5.96</td>
<td>4.93*</td>
<td>5.69</td>
</tr>
<tr>
<td>Physical distress (P) score</td>
<td>7.89</td>
<td>6.16'</td>
<td>7.31</td>
</tr>
<tr>
<td>Total distress (E+P) score</td>
<td>13.85</td>
<td>11.08**</td>
<td>13.0</td>
</tr>
</tbody>
</table>

*P<0.01, **P<0.005 (significance compared with control group)

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### Table 3
**SELF REPORTED EASE OF INTUBATION AND EMOTIONAL AND PHYSICAL DISTRESS SCORES FROM PATIENT QUESTIONNAIRE**

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Sedation</th>
<th>Acupuncture</th>
</tr>
</thead>
<tbody>
<tr>
<td>Completed questionnaires</td>
<td>(44)</td>
<td>(76)</td>
<td>(53)</td>
</tr>
<tr>
<td>Ease of intubation</td>
<td>7.30</td>
<td>6.21**</td>
<td>7.43</td>
</tr>
<tr>
<td>Emotional (E) distress</td>
<td>10.61</td>
<td>9.41</td>
<td>9.30</td>
</tr>
<tr>
<td>Physical (P) distress</td>
<td>15.57</td>
<td>13.93</td>
<td>15.66</td>
</tr>
<tr>
<td>Total distress (E+P) score</td>
<td>26.18</td>
<td>23.34**</td>
<td>24.96</td>
</tr>
</tbody>
</table>

*P<0.05, **P<0.02 (significance compared with control group)
acupuncture in OGD (3). There are several possible influencing factors including the use of anaesthetic throat spray, the needle stimulation time and the electroacupuncture. The use of a xylocaine throat spray in this study but not in the electroacupuncture trial may have reduced the possibility of analgesia from the acupuncture on pharynx and oesophagus compared to those patients having no treatment. In this study, not only were fewer acupuncture points used, but the needles were left in-situ for shorter periods of time and given no stimulation after insertion. The routine and the time taken with this method of acupuncture is similar to that required for the administration of the intravenous sedation, and the method was adopted in this study because it would fit in without significant alteration to the current routine of the department. However, this variation in acupuncture method may have resulted in less analgesia and reduction of discomfort for the acupuncture group than might have been expected.

The benefit of not being sedated during OCD is demonstrated by the lack of respiratory problems in those patients not given sedation, in particular those in the acupuncture group. Other benefits not documented in this study include less need for nursing care post operatively, early discharge from hospital and immediate, fully rational communication with the patient to discuss diagnosis and further treatment. However, the problems reported with intravenous sedation could well be modified through more careful attention to dosage, thereby eliminating the respiratory depression of over-sedation, and the replacement of diazepam with the more modern drug midazolam, which has a substantially better recovery profile.

Conclusion
Although this study reports that diazepam sedation appears statistically superior to control or acupuncture in relieving distress during endoscopy, acupuncture showed some evidence of reduction in self-reported emotional distress. Improving the effects of acupuncture may be possible by using more acupuncture points, longer needle stimulation time (5) and electroacupuncture stimulation (3). This will be explored in a future study.

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References

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