# THE ANXIOLYTIC EFFECT OF HYPNOSIS IN COLONOSCOPY AND SIGMOIDOSCOPY

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## ABSTRACT

The impact of a very brief hypnotic intervention was assessed by measuring its anxiolytic and analgesic effects with patients undergoing colonoscopy and sigmoidoscopy. Additionally, the quality of colonoscopy performed with hypnosis was assessed by comparing its adenoma detection rate to the UK national standard. Two groups of patients were treated, 35 with hypnosis and 31 without.

There were no significant differences between the groups in the adenoma detection rates. Neither were there in the amounts of sedation used during the procedures, suggesting that hypnosis did not have a marked analgesic effect. This was confirmed both by self-rated discomfort scores and by nurse-rated scores, neither of which showed any statistically significant inter-group differences. However, there was a highly significant ($p < 0.001$) impact upon anxiety, with the hypnosis group recording markedly lower ratings following the intervention.

*Keywords:* hypnosis; sedation; colonoscopy; sigmoidoscopy

## INTRODUCTION

Sedation is the commonest strategy to alleviate discomforts during endoscopies. About 90% of colonoscopies are performed under sedation in the United Kingdom (Rees et al., 2016) as are most of the procedures performed in America (Cohen et al., 2006) and Australia (Sathananthan et al., 2017). The commonest sedative medication currently used is Midazolam, and its use is usually augmented with analgesics such as Fentanyl or Pethidine. Alternatively, Propofol infusion with supervision has become increasingly popular (Ooi and Thomson, 2015). The use of sedation has been proven safe but it is not without risks. Up to 1% of patients experience cardiovascular problems, and respiratory distress is seen in up to 8 of every 1000 patients undergoing the procedure (Ko et al., 2010). The British Society of Gastroenterology Sedation Guideline (2018) limits the use of sedative medication for colonoscopy and flexible sigmoidoscopy at a maximum averaged dose of 5mg Midazolam and at a maximum averaged dose of 50mg Pethidine for patients below 70 years old. For those aged 70 years old or over, the maximum averaged dose of Midazolam is capped at 2mg.

Hospitals had formulated guidelines and policies to ensure the safety of procedural sedations. Our hospital policy for procedural sedation were i) the American Society of Anaesthesiologists (ASA) score of the patient to be 3 or less, in particular no significant respiratory co-morbidities such as chronic obstructive airway disease; ii) the patient to have an escort arranged and to

be with an adult the night after the procedure. Patients with a higher ASA score or without an escort underwent the procedure without sedation.

The use of procedural sedation places social demands upon patients and they require dedicated recovery time and an escort upon discharge (British Society of Gastroenterology Sedation Guideline, 2018) It is not uncommon to have patients choosing not to have sedation because they could not arrange escorts or carers. Some may prefer to have the procedure done without sedation for social reasons and limited data shows that the quality of the endoscopy is not compromised (Iqbal et al, 2016). However many centres do not offer the procedure without sedation (Johannes, 2011).

Hypnosis has been used to alleviate discomfort during medical procedures such as hernia repair (Romain et al., 2017) and endoscopy (Elkins et al., 2006). The theory of hypnosis is to produce a state of trance and allow the patient to dissociate the nociceptive stimuli of the procedure from their consciousness (Peter, 2015). There are case series that have demonstrated the feasibility and the utility of hypnosis during endoscopy (Izanloo et al., 2015). It is a technique that can be used alone or in conjunction with sedation and, unlike sedation, it is not associated with unpleasant side effects. When used alone, patients under hypnosis may enjoy a quicker recovery with no restriction of driving. With hypnosis, there is no intravenous access required and there is minimal monitoring required during the procedure. Unlike using sedative medication, after hypnosis, patients who live alone or who are unable to organize escort would no longer require an overnight admission. The potential cost reduction by offering hypnosis to patients would be large when combining a shorter recovery time and less sedation-related complications. The efficacy of hypnosis has not been verified nonetheless.

The purpose of this article is to examine the anxiolytic and analgesic effect of hypnosis during colonoscopy and sigmoidoscopy using a brief hypnosis intervention. The secondary objective of this article is to explore the quality of colonoscopy performed under hypnosis by comparing its adenoma detection rate (ADR) to the UK standard by British Society of Gastroenterology.

## METHODS

A series of patients attending for either a colonoscopy or a sigmoidoscopy from February to July 2018 were recruited. With the agreement of the endoscopy unit, all patients were offered hypnosis prior the planned endoscopy. The procedure could be performed with or without sedation. For those who agreed to have hypnosis, a scripted hypnosis intervention was read to the patients and time spent on reading was recorded. For those who planned to receive sedation, this was administered by the proceduralist (MH) following the British Society of Gastroenterology guideline. The procedure was then carried out in the usual manner. After the procedure, a perioperative discomfort score, on a 10-point visual analogue scales (VAS), was obtained from the patient, and a nurse-reported discomfort score (5-point score) and a patient satisfaction score (0–100 VAS score) were recorded. In patients receiving hypnosis, an anxiety score (0–100 VAS score) was collected prior to the intervention and on arrival in the endoscopy suite. The amount of sedation (Midazolam) and analgesia (Pethidine) was recorded. ADR was calculated by the number of colonoscopies with detection of at least one adenoma or malignancy during the procedure and the number of colonoscopies performed in the cohort period.

*Table 1. Demographics and endoscopy related indicators*

|  | Hypnosis group | Non-hypnosis group | *p* value |
|---|---|---|---|
| Number | 35 | 31 |  |
| Mean age | 62.9 | 56.7 | .09 |
| Gender ratio (F%) | 31% | 52% | .09 |
| Concomitant procedures | 14% | 23% | .38 |
| Failure rate | 3% | 3% | .93 |
| Satisfactory | 94.7 | 95.5 | .65 |

RESULTS

Sixty-six endoscopies were performed during the study period, encompassed 42 colonoscopies and 24 sigmoidoscopies. Twenty-five colonoscopies and 10 sigmoidoscopies performed with hypnosis. The mean length of the hypnosis intervention was 3 minutes and 37 seconds (range from 3 minutes to 4 minutes and 38 seconds). There were no significant differences in demographic details between the two groups. The demographic data and endoscopy-related indicators are illustrated in Table 1. There were no short-term complications during the study period, such as unplanned admission, perforation and major bleeding. The failure-to-complete rate was 1 (3%) in hypnosis group and 1 (3%) in control group ($p = 0.93$). There were no significant differences in satisfaction scores between the two groups (94.6 in hypnosis group and 94.8 in control group, $p = 0.65$).

Overall, there were no differences in the mean patient discomfort score and the mean nurse-reported discomfort score between the two groups. The averaged patient discomfort score was 5.2 in the hypnosis group and 4.2 in the control group ($p = 0.13$). The averaged nurse-reported discomfort score was 2.2 in the hypnosis group and 2.0 in the control group ($p = 0.56$). In the colonoscopy subgroup, the ADR rate in the hypnosis group was 28% and 35% in the control group ($p = 0.35$). The mean patient discomfort score was 5.3 in the hypnosis group and 4.7 in the control group ($p = 0.41$). The mean nurse-reported discomfort score was 2.2 in the hypnosis group and 1.9 in the control group ($p = 0.43$). Similar results were found in the sigmoidoscopy subgroup. The mean patient discomfort was 5.2 in the hypnosis group and 3.7 in the control group. The mean nurse-reported discomfort score was 2.2 in the hypnosis group and 1.5 in the control group. Results on discomfort scores are summarized in Table 2.

The amount of sedation used in the hypnosis group was lower than that of the control group. The mean dose of Midazolam used in the hypnosis group was 1.7 mg while 1.9 mg of Midazolam was used in the control group, but the difference was not statistically significant ($p = 0.74$). More patients received no sedation in the hypnosis group, 9 out of 25 (36%) in the hypnosis group, compared to 5 out of 17 (29%) in the control group ($p = 0.66$). All sigmoidoscopies (100%) in the control group were performed without sedation. Results on sedation used are summarized in Table 3

The anxiety score was significantly reduced after hypnosis. The mean pre-hypnosis anxiety score was 65 out of 100 and the mean post-hypnosis anxiety score was 35 out of 100 ($p<0.001$).

*Table 2. Discomfort score*

|  | Hypnosis group | Non-hypnosis group | *p* value |
|---|---|---|---|
| All endoscopy, number | 35 | 31 |  |
| Averaged patient discomfort score | 5.2 | 4.2 | 0.13 |
| Averaged nurse-reported discomfort score | 2.2 | 2.0 | 0.56 |
| Anxiety score | −3.0 | – | <0.001 |
| Colonoscopy, number | 25 | 17 |  |
| Averaged patient discomfort score | 5.3 | 4.7 | 0.41 |
| Averaged nurse-reported discomfort score | 2.2 | 1.9 | 0.42 |
| Colonoscopy without sedation, number | 9 | 5 |  |
| Averaged patient discomfort score | 4.6 | 5.4 | 0.59 |
| Averaged nurse-reported discomfort score | 2.1 | 2.8 | 0.26 |
| Sigmoidoscopy, number | 10 | 14 |  |
| Averaged patient discomfort score | 5.2 | 3.7 | N/A |
| Averaged nurse-reported discomfort score | 2.2 | 1.5 | N/A |

*Table 3. Sedation used*

|  | Hypnosis group | Non-hypnosis group | *p* value |
|---|---|---|---|
| Colonoscopy, number | 25 | 17 |  |
| Averaged Midazolam used | 1.7 | 1.9 | 0.74 |
| Averaged Pethidine used | 14 | 22 | 0.16 |
| Performed awake, number (%) | 9 (36%) | 5 (29%) | 0.66 |
| Sigmoidoscopy, number | 10 | 14 |  |
| Averaged Midazolam used | 0.75 | 0 | N/A |
| Averaged Pethidine used | 2.5 | 0 | N/A |
| Performed awake, number (%) | 25 (100%) | 14 (100%) | N/A |

## DISCUSSION

This is the first study, to our knowledge, to systematically examine the efficacy of hypnosis in colonoscopy and sigmoidoscopy. Currently, two small case series of patients undergoing lower gastrointestinal endoscopy to examine the utility of hypnosis have been described (Cadranel et al., 1994). In the Elkins (2006) study, six patients using hypnosis for colonoscopy were compared to 10 patients undergoing standard care. Patients had a 20-minute hypnosis intervention performed by a psychologist prior to the procedure. Elkins demonstrated that

hypnosis produced a significant reduction in procedural anxiety, a shorter procedure with a quicker recovery time. In Cadranels (1994) study, patients were offered two hypnosis training sessions lasting 45 minutes each in the days prior to the procedure. Colonoscopy was completed in 19 of 20 patients (95%) without sedation in his series. The excellent results in both these studies were achieved following considerable investment in time and resources. Most hospitals are unlikely to have trained psychologists readily available or be able to provide extensive advance training to patients.

By contrast, our cohort was larger with 66 patients in total. Hypnosis was performed on the day using a standardized script delivered by a trained clinician. It was kept deliberately short so as not to interfere with the smooth running of the service. We demonstrated that it was feasible to perform quality colonoscopies and sigmoidoscopies using a brief hypnosis intervention comparable to current standard practice. However, we cannot demonstrate the analgesic effects of hypnosis in colonoscopy and sigmoidoscopy.

The reasons behind were likely to be multifactorial but selection bias may play a role. It has been established that 'hypnotizability' or 'hypnotic suggestibility' is associated with the response to hypnotic analgesia suggestions (Milling et al., 2010). Our patients were not screened for hypnotizability, so those who agreed to have hypnosis may not have included the highest scoring on hypnotizability. It is difficult to separate the two factors in a cohort setting. Other factors may have been the brevity of the script or the relative paucity of analgesic suggestions within the script.

In colonoscopy, hypnosis did not seem to replace sedation as an analgesic. The combination of hypno-sedation did not further reduce discomfort scores in our cohort. During the study, a smaller dose of initial sedation was given in the hypnosis group. As the result, this suggests that there might be a potential for a reduction in overall sedation use with hypnosis. Hypnosis may also be a useful adjunct if patients choose to have the procedure awake, or if sedation use is contraindicated. In sigmoidoscopy, almost all procedures were done without sedation. With no evidence of an additional analgesic effect, there may be a very limited role of hypnosis in sigmoidoscopy.

Lower gastrointestinal endoscopy as an invasive procedure carries the potential for embarrassment and pain as well as concern for any procedural findings. This can produce considerable patient anxiety that may impair patient compliance and negatively impact on their experience and satisfaction. Hypnosis has been shown in randomized trials to be an effective anxiolytic during medical procedures (Lang et al., 2000). Similarly, our study showed that a brief scripted hypnotic intervention produced a significant reduction in patients' anxiety scores prior to their procedure suggesting that it may be a suitable anxiolytic.

There may be concerns of the quality of the endoscopy performed under hypnosis. We have demonstrated a reasonable ADR of 28% in the colonoscopies performed under hypnosis. This ADR compared favourably to a recent UK study with an ADR of 15.9% (Rajasekhar et al., 2012). This result was also consistent with the study by Bannert et al. (2012), which showed that there was no impact on ADR by using sedation or not. A recent study by Thirumurthi and colleagues (2017) also showed that the level of sedation had no impact to ADR.

This cohort study was not without its limitations. Although we did not encounter complications such as perforation and major bleeding, this small single-centre and single-proceduralist study precluded any valid conclusion on safety. The actual efficacy of hypnosis was still largely unknown given that there was no randomized trial directly comparing

hypnosis with placebo and sedation. Such a study may be difficult to construct since there is no standardized technique with demonstrated efficacy in hypnosis available to act as the treatment arm.

## CONCLUSION

We have demonstrated with a cohort series that sigmoidoscopy and colonoscopy using hypnosis was possible and the procedures could be performed with quality under hypnosis. In neither colonoscopy nor sigmoidoscopy were we able to demonstrate that hypnosis offered any additional analgesic effect. However, given its efficacy in reducing anxiety, a brief hypnosis intervention may be considered as a viable adjunct for anxious patients undergoing these procedures.

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