

## The Effect of Timing of the Spasmolytic Agent Before Or During Colonoscopy



### Medical Science

**KEYWORDS :** colonoscopy, hyosine N butylbromide, premedication, antispasmodic

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### ABSTRACT

**Background:** Colonic spasm that encountered during colonoscopy lengthens the process, increases the need for sedation, makes it difficult to progress within the lumen, may disrupt the display of the colonic mucosa. Use of antispasmodic medication during colonoscopy is controversial. The aim of this study is to determine whether there is any objective benefit on caecal intubation time and the median total procedure time when hyoscine N butylbromide is used as a premedication 15 minutes before the colonoscopy or by the start of colonoscopy.

**Method:** A hundred consecutive patients were randomly assigned to receive intravenous 1 mL hyoscine N butylbromide containing 20 mg/mL of the drug, 15 minutes before the procedure (Group 1) or by the start of the procedure (Group 2) in conjunction with our standard initial medications (midazolam, fentanyl, propofol).

**Results:** Our analysis demonstrated no statistically significant difference between groups with the caecal intubation time, the median total procedure time and mean propofol dose used as anaesthetic. Considering the mean pulse rate and mean arterial pressure, there is a statistically significant difference between the groups during the procedure.

**Conclusion:** Rapid action and beneficial efficiency support the use of hyoscine N butylbromide in diagnostic abdominal procedures, where spasm may be a problem.

### INTRODUCTION:

Colonoscopy is an invasive procedure that bothers the patient. Colonic spasm that encountered during colonoscopy lengthens the process, increases the need for sedation, makes it difficult to progress within the lumen, may disrupt the display of the colonic mucosa (1). Hyoscine N butylbromide is clinically used to treat intestinal cramps and visceral pain (2,3). Use of antispasmodic medication during colonoscopy is controversial (4-6). The aim of this study is to determine whether there is any objective benefit on caecal intubation time and the median total procedure time when hyoscine N butylbromide is used as a premedication 15 minutes before the colonoscopy or by the start of colonoscopy.

### METHOD:

After obtaining ethics committee approval and patient consent, one hundred patients were scheduled for outpatient diagnostic colonoscopy participated in the study. Colonic preparation was performed using oral sodium phosphate and enema. Patients with a previous history of abdominal surgery, glaucoma, obstructive uropathy, autonomic dysfunction, unstable angina, arrhythmia, hypersensitivity to the study drugs were excluded from the study. Patients were randomly assigned to receive intravenous 1 mL hyoscine N butylbromide containing 20 mg/mL of the drug, 15 minutes before the procedure (Group 1) or by the

start of the procedure (Group 2) in conjunction with our standard initial medications (midazolam, fentanyl, propofol). Sedation was applied by titration until Ramsey Sedation Scale was 3. During the procedure, 4 L/min O<sub>2</sub> was applied via a face mask. Colonoscopy was performed using an Olympus videocolonoscope. Parameters measured included the time required to reach the cecum, total procedure time, surgeon's, anaesthetists' and patient's satisfaction, pain score after the procedure. Satisfaction by anaesthetist, surgeon and patient was evaluated by 5-point Likert scale (5: Highly satisfied, 4: satisfied, 3: partially satisfied, 2: not satisfied, 1: not at all satisfied); pain was evaluated with 10 mm Visual Analogue Scale (VAS (0 = none, 10 = very severe) and patient willingness to repeat colonoscopy. Blood pressure, heart rate and oxygen saturation were measured at 3 minutes intervals during the procedure. Statistical analysis was performed using the student's t test and chi-square test. P < 0.05 was statistically significant.

### RESULTS:

During the study period, 100 colonoscopies were performed. 11 patients from Group 1 and 10 patients from Group 2 were excluded from the study due to poor preparation. There were 21 females and 18 males in Group 1, 20 females and 20 males in Group 2. Twelve patients in Group 1 and 13 patients in Group

2 were also underwent polypectomy. The mean age of patients were 56.38±12.76 in Group 1 and 53.08±15.68 in Group 2 (p= 0.307). No statistically significant difference between groups respect to demographic datas. BMI were 27.62±3.16 kg/m<sup>2</sup> in Group 1 and 26.43±3.86 kg/m<sup>2</sup> in Group 2 (p= 0.139). ASA classification of patients is ASA 1: 14, ASA 2: 24, ASA 3:1 in group 1; ASA 1: 20, ASA 2: 19, ASA 3:1 in group 2.

Our analysis demonstrated no statistically significant difference between groups with the ceacal intubation time, the median total procedure time and mean propofol dose used as anaesthetic ( Table 1).

**Table 1**

	Group 1	Group 2	p
Ceacal intubation time (min)	8.59±3.54	8.40±2.52	0.628
Median total procedure time (min)	13.00±3.70	14.58±3.72	0.099
Mean propofol dose (mg)	133.85±32.73	144.25±42.78	0.187

Considering the mean pulse rate and mean arterial pressure, there is a statistically significant difference between the groups during the procedure. This difference wasn't observed after the end of procedure (Table 2).

**Table 2**

	Mean tansion arterial during the procedure mmHg	Mean pulse rate during the procedure min-1	Mean tansion arterial after the procedure mmHg	Mean pulse rate after the procedure min-1
Group 1	98.67±14.36	86.18±16.78	82.82±16.83	92.33±15.23
Group 2	87.74±11.80	94.70±14.01	79.30±14.27	88.53±16.94
p	0.001*	0.018*	0.319	0.297

\*p<0.05

Mean tansion arterial was higher, but mean pulse rate was lower in Group 1.

The mean pain score experienced by the patients was 2.77 ± 1.91 in Group 1 and 1.88 ± 1.06 in Group 2 (p=0.209). There was no significant difference between groups. Satisfaction distributions are shown in Table 3.

**Table 3 (Likert ölçeği 5: Highly satisfied, 4: satisfied,3:partially satisfied, 2: not satisfied, 1: not at all satisfied)**

	5	4	3	2	1
Anaesthetist	73	6	-	-	-
Surgeon	62	15	2	-	-
Patient	74	5	-	-	-

All patients agreed to repeat the process on the same terms.

**DISCUSSION:**

In this study, application of hyoscine N butylbromide 15 minutes before colonoscopy or by the start of colonoscopy did not not effect total procedure time or caecal access time. Also pain score, total propofol dose, surgeon, anaesthetist and patients satisfaction were not effected by the timing of study drug. However timing of study drug significantly effected hemodynamic stability. Mean tension arterial was higher and mean pulse rate was lower in group 1.

Hyoscine N butylbromide was first registered in Germany in 1951 and marketed in 1952 (7). It is a quaternary ammonium compound derived from scopolamine (8). Pharmacological studies have revealed that it is an anticholinergic drug with high affinity for muscarinic receptors located on the smooth-muscle cells of the gastrointestinal tract. It also binds to nicotinic receptors, which induces a ganglion-blocking effect (3,7). It has a high tissue affinity for muscarinic receptors (7). It increases the heart rate and may cause postural hypotension. Hyoscine-N-butylbromide is rapidly distributed into tissues after intravenous administration ( t1/2alfa=4 minutes , t1/2beta=29 minutes ) (9). The decrease in mean arterial blood pressure and tachycardia in Group 2 can be explained as drug effect combined with propofol. Applying hyoscine N butylbromide 15 minutes before the procedure, provided more stable hemodynamics in Group 1.

It is important that colonoscopy must be quick and easy for surgeon. Also the procedure must be comfortable for the surgeon and for the patient, painless and can be tolerated by the patient (6). Development of spasm during colonoscopy, makes the procedure painful, difficulty in colonoscope insertion, deterioration visualization of colonic mucosa (1,6). Most colonoscopies are performed with using hyoscine N butylbromide application to prevent colonic spasm, to fasten procedure time, relieve pain and to improve visualization of colonic mucosa and detection rate of adenoma (2,4,10,11).

There are many studies that compared colonoscopy with and without hyoscine N butylbromide application in the litherature. In the review of the literature, we had not encountered any study that investigate the effect of timing of hyoscine N butylbromide in colonoscopy on vsvsvsvs.

Mui et al (12) reported that Premedication with intravenously administered hyoscine N-butylbromide impedes colonoscope insertion and causes greater patient discomfort, as well as hemodynamic instability. But Saunder et al (4) reported that premedication with intravenous hyoscine N-butylbromide reduces colonic spasm and made colonoscope insertion significantly quicker and easier. Marshall et al (13) reported that premedication with intravenous hyoscyamine sulfate was beneficial in terms of the time required for ceacal intubation, total procedure time, adequacy of sedation, and scales of patient comfort. The only adverse effect seen during the study was tachycardia.

Kayaoğlu et al (6) reported that application of hyoscine N butylbromide as premedication before colonoscopy do not effect the total procedure time and caecal access rate. However it significantly reduces the pain score described by the patients. In the present study, VAS score was higher in Group 1 compared with Group 2 but it is not statistically significant.

**Conclusion:**

The muscle relaxing effect of hyoscine N butylbromide and its inhibition of muscarinic nerve activation likely explain its clinical use as an antispasmodic drug. Rapid action and beneficial efficiency support the use of hyoscine N butylbromide in diagnostic abdominal procedures, where spasm may be a problem.

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